INDUSTRIAL MEDICINE AND SURGERY

The Journal of Medicine in Industry

With which are consolidated "The Industrial Doctor"® and "International Journal of Medicine and Surgery"

This magazine is published to promote sound thought concerning industrial medicine and the surgery of trauma. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

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1953 INDUSTRIAL HEALTH CONFERENCE
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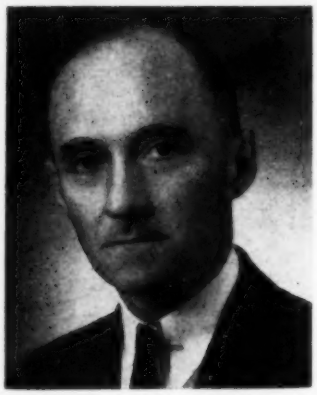

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BEVERLY L. VOSBURGH, M.D., Medical Director, and head of the G-E plant hospital at Schenectady, has been named Manager of Health Services for the General Electric Company, functionally responsible for health and hygiene programs for about 215,000 G-E employees in 125 plants throughout the nation. He assumed his new duties November 1, 1952. He will make his headquarters at Schenectady. This appointment marks the first time General Electric has placed the coordination of its health services with an individual. DR. VOSBURGH is a graduate of Union College, Schenectady, and the Albany Medical College. After receiving his medical degree in 1922, he interned at Ellis Hospital, Schenectady, and joined General Electric in 1923. He has long been active in local and national organizations in the field of industrial medicine, and clinically tested the first electrocardiograph developed by General Electric. He specialized in electric shock studies as a member of the American Institute of Electrical Engineers, has held medical advisory posts in the American Welding Society and the American Standards Association, and is on the Regional Fracture Committee of the American College of Surgeons. He is a member of the Schenectady County and New York State Medical Societies and the American Medical Association, a Fellow and past director of the INDUSTRIAL MEDICAL ASSOCIATION, and a Fellow of the American Academy of Occupational Medi-

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cine. He lectures on public health at the Albany Medical College, and has conducted studies and written many papers on diseases in industry.

RUTHERFORD T. JOHNSTONE, M.D., was the speaker at an industrial health dinner at the Multnomah Hotel, Portland, Oregon, October 7. The dinner was sponsored by the Committee on Industrial Health of the Oregon State Medical Society and the Health Affairs Committee of the Portland Chamber of Commerce.

NEW JERSEY ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS held its Annual Meeting November 21, 1952, at the premises of the Standard Oil Development Company, Linden, New Jersey. A tour of the Medical Department and Research Center Facilities was followed by a dinner after which, at the meeting in the auditorium, there were speakers on "Standard Oil Development Company Medical Department Activities," and "Activities of the Medical Research Division."

NEW ENGLAND INDUSTRIAL MEDICAL ASSOCIATION held its Annual Meeting, and election of officers, November 12, 1952, at the Hotel Bradford, Boston. The speaker of the occasion was DR. GEORGE MORRIS; his subject—"Industrial Dermatitis, Its Facts and Foibles."

MAC ROY GASQUE, M.D., Medical Director, Ecusta Paper Corporation, Pisgah Forest, North Carolina, was General Chairman of the medical portion of a meeting conducted by the company's Medical Department for the regional chapter of the Society For The Advancement Of Management, December 2, 1952. The theme of the meeting was "The Value of Medical Maintenance for Industrial Workers"; and the speakers were WILLIAM H. SEYMOUR, Vice-President, Liberty Mutual Insurance Company, Boston; MANSON MEADS, M.D., Director, Department Preventive Medicine, Bowman Gray School of Medicine, Winston-Salem, North Carolina; H. CHARLES BALLOU, M.D., The Greenbrier Clinic, White Sulphur Springs, West Virginia; ALLAN J. FLEMING, M.D., Assistant Medical Director, E. I. du Pont de Nemours & Company,

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REFERENCES:
1. Gastric Tolerance for Aspirin and Buffered Aspirin. Ind. Med. 20:480, Oct. 1951.
2. Effect of Buffering Agents on Absorption of Acetylsalicylic Acid. J. Am. Pharm. Assoc., Sc. Ed. 39:21, Jan. 1950.

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LEONARD GREENBURG, M.D., on November 24, 1952, took over his duties as first Commissioner of the new Department of Air Pollution Control of the City of New York. The new department replaces the Bureau of Smoke Control, which had been part of the Department of Housing and Buildings. DR. GREENBURG will also be Chairman of the new Board of Air Pollution Control, of five members. Three of the members will be the Commissioners of Air Pollution, Housing and Buildings and Health. Two other members with professional training in public health, sanitation, industrial hygiene and air pollution control will be named by the Mayor with the advice of DR. GREENBURG. Since 1935 DR. GREENBURG has been Executive Director of the Division of Industrial Hygiene and Safety Standards of the New York State Department of Labor. He received a degree in sanitary engineering from Columbia University in 1915; a Ph.D. in public health from Yale University in 1923, and an M. D. from the Yale School of Medicine in 1930. He was associated with the office of industrial hygiene of the U.S. Public Health Service from 1918 to 1932. He was Health Commissioner of New Haven, Connecticut, in 1934 and 1935. He is the author of more than 60 articles in public health and scientific journals, the first having been published in 1919.

THIS MONTH

INDUSTRIAL medicine was represented at the Fall Personnel Conference of the American Management Association, September 29 to October 1, in New York, by DR. CARL T. OLSON and DR. KENNETH C. PEACOCK. DR. OLSON'S "Maintenance of Health in the Elderly Work Force" appears on page 581. DR. PEACOCK, "has engaged in the practice of general surgery and industrial medicine, and has served as director of group practice in industrial medicine, for 20 years." His subject at the Personnel Conference was "The Dollar Value of Medical Care for Small Industrial Units." In addition, New Jersey Bell Telephone Company prepared an exhibit for the Personnel Workshop which was a Conference feature, and DR. L. HOLLAND WHITNEY, New Jersey Bell's Medical Director, sending us the illustration, notes that this exhibit attracted a considerable amount of management attention, and, since the Conference, has drawn inquiries from all sections of the country . . . . A TV PANEL, November 27, voiced several opinions on absenteeism. After considerable comment on incentives for attendance at work, one member of the panel said that instead of being given extra pay of one kind or another for not being absent, the non-regulars should be penalized, via their pay envelopes, for being absent. It was appeasement versus penalty. And the lone man in favor of the latter was chided for his "pessimism." Nevertheless we venture that his expression voiced a thought that many are thinking, and many more will think, now that the avowed Republican no longer has to register with the game warden. Along this line, DR. GORDON'S "Five-Year Plant Experience" in industrial psychiatry (page 585) is doubly interesting. "The real cause of the difficulty in the nervous patient is that he is not being required to behave properly . . . ." Too much "appeasement"—too little firmness. One of the speakers at Industrial Hygiene Foundation's meeting last month, noted that an important element of the employee-security—so much talked about pre-November 4, and still to be sought, but on a more sensible basis—is "a good boss." The evidence begins to accumulate that a good boss is a firm boss . . . . ANOTHER TV show, more directly related to industrial medicine, was produced by the Michigan Health Council, over station WJBK-TV, channel 2, Detroit, on Sunday, November 23. This was one of a series called "The Court of Health," using a court-room format, with a judge-moderator presiding; and it told the story of the industrial nurse. The advocates were MRS. THELMA DURHAM, R.N., President of the American Association of Industrial Nurses; MISS HELEN DECOURSEY, R.N., Kelsey-Hayes, Detroit; MISS MARION CASTRODALE, R.N., Upjohn Company, Kalamazoo; and MRS. BEULAH SATTLEY, R.N., Chrysler Corporation, Detroit. The Judge summed up the half-hour of testimony: "Today the person employed in industry has a complete health team working in his interest. The industrial nurse is an important integral part of this team, giving personal and professional nursing care in sickness and emergencies." Among the comments heard at the monitor in the station hall was this: "In addition to their many other fine qualities, industrial nurses are abundantly photogenic". . . . INCIDENTALLY, "the industrial health team" is the subject of the Fourth Discussional on Industrial Health Programs being held at the School of Public Health, University of Michigan, Ann Arbor, December 12 and 13. The emphasis is on "The Worker as a Member of the Team"—"it's so much better to promote industrial health with him than at him" . . . .

New Jersey Bell Telephone's Medical Department exhibit at the AMA Personnel Conference.

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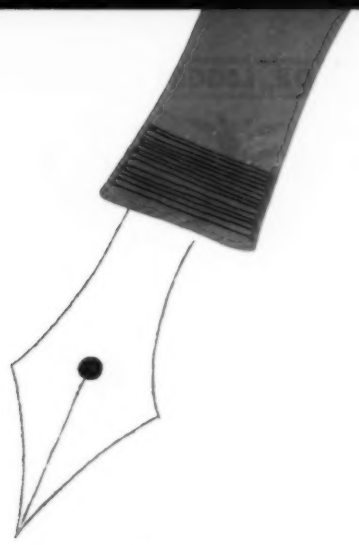

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Industrial Medical and Related Chronology selected and arranged by ROBERT T. LEGGE, M.D., F.A.C.S., Berkeley, California

"And suddenly there was with the angel a multitude of the heavenly host praising God, and saying, Glory to God in the highest, and on earth peace, good will toward men."
—*The Gospel according to St. Luke*

♐ = Sagittarius — November 23-December 22 | ♑ = Capricorn — December 23-January 20

1952 DECEMBER

"They say that ever 'gainst the season comes
Wherein our Saviour's birth is celebrated
The bird of dawning singeth all night long.
And then, they say, no spirits dare stir abroad.
The nights are wholesome then, no planets strike,
No fairy takes, nor witch hath power to charm,
So hallowed and so gracious is the time."
—*Shakespeare*

☽ 1st Quar. ○ Full Moon ☾ 4th Quar. ● New Moon

1 M — 1865—William Allen Pusey born at Elizabethtown, Kentucky. Pre-eminent in dermatology in Chicago. First to use carbon dioxide snow. Author of "Principles and Practice of Dermatology." Ex-president, A.M.A.
"And gladly would he learn, and gladly teach"—Chaucer

2 ♐ Tu — 1892—Raymond A. Kelser, D.V.S., Brigadier General U.S.A., discovered transmission of encephalomyelitis by mosquitoes and developed a vaccine for rinderpest resulting in the eradication of worst stock plague in the Philippines. Awarded the Gorgas Medal.

3 ♐ W — 1807—David Alter, M.D., born in Westmoreland County, Pennsylvania. Discoverer of spectrum analysis.
"The belief in something higher than ourselves in an intangible, unattainable ideal, is the source of all human culture and all progress"—Max Von Pettenkofer

4 ♐ Th — 1890—Behring and Kitasato discovered diphtheria antitoxin.
"Our estimate of a character always depends much on the manner in which that character affects our own interests and passions"—Macaulay

5 ♐ Fr — 1950—Harold T. Castberg, a native of San Francisco, died in Chicago. Was Chief of California State Board of Health (Industrial Hygiene), and Officer in U.S.P.H. Service, Division of Industrial Hygiene.
"The less we know the more we suspect"—Billings

6 ♐ Sa — 1617—A charter was issued, and the Master, Wardens, and the Society of the Art and Mystery of the Apothecary of the City of London became an independent city guild.
"Those who have free seats at the play hiss first"—Chinese Proverb

7 ♐ S — 1912—Theodore Tuffier, 1857-1929, a French surgeon, developed a test for adequate circulation.
"Nothing in life is more wonderful than faith—the one great moving force which we can neither weigh in the balance nor test in the crucible"—Osler

8 ♐ M — 1922—Drs. H. M. Evans and K. Scott Bishop, of the University of California, discovered vitamin E, a factor essential for reproduction.
"He hath made everything beautiful in his time"—Ecclesiastes

9 ☾ Tu — 1946—Leroy U. Gardner, M.D., 57, died at Saranac Lake, New York. An eminent pathologist in lung diseases. Director of the Trudeau Foundation; awarded the Trudeau Medal, and the William S. Knudsen Award for outstanding achievements in industrial medicine.

10 ♐ W — 1934—Theobald Smith, regarded by many as America's greatest scientist, died in New York City. Founder of the American Academy of Tropical Medicine. Discovered the role of cattle tick in transmitting disease.
"Men's faults do seldom to themselves appear"—Shakespeare

11 ♐ Th — 1843—Robert Koch born at Kansthal, a small town in the Harz Mountains. Discoverer of the tuberculosis and cholera organisms. Professor of the School of Medicine and Director of the Institute of Hygiene and the Bacteriological Institute of Berlin.

12 ♐ Fr — 1846—Eugen Baumann born in Cannstatt, Germany. Professor of Chemistry, Medical Faculty, Frieberg, Germany. First to associate iodine definitely with the thyroid gland.
"The rate of advance of medicine is to be tested by what the country is"—Weir Mitchell

13 ♐ Sa — 1890—Frederick Trendelenburg, 1844-1924, Leipsig surgeon, developed new operating table designed for operations in posture bearing his name.
"The wounded oyster mends his shell with a pearl"—Franklin

14 ♐ S — 1777—George Washington, Father of his Country, first President of the U.S. died at his home at Mt. Vernon. His old friend, Dr. John Crack, attended him. Cause of death "Cynanche tracheales." Washington's last words: "Doctor, I die hard, but I am not afraid to go."

15 ♐ M — 1908—Antoine Henri Becqueral died at Paris. Eminent French physicist. He discovered the radiation from uranium. Nobel Prize with Curie in chemistry, 1903.
"Distrust all in whom the impulse to punish is powerful"—Nietzsche

16 ● Tu — 1793—John Hunter died at St. George's Hospital, of angina pectoris. His greatest works are natural history of the human teeth and a treatise on blood, inflammation, and gunshot wounds.
"Our words and actions to be fair, must be timely"

17 ♐ W — 1903—The air age was born when the Wright brothers made their historic flight at Kitty Hawk; and aviation medicine came into being.
"A man's body is remarkably sensitive. Pat him on the back and his head swells"—Anon

18 ♐ Th — 1856—Joseph John Thomson born near Manchester, England. Noted English physicist and mathematician. Professor of experimental physics at Cambridge. Nobel Prize for physics 1906.
"Noise is on every payroll"—Hooper

19 ♐ Fr — 1942—Plans were set up to build the new Crile Clinic at Cleveland; Edward Daoust as President, and Hal Sherman as Chairman of the Board of Trustees.
"A cheerful face is nearly as good for an invalid as healthy weather"—Franklin

20 ♐ Sa — 1936—Sir John Bland Sutton, a famous surgeon at the Middlesex Hospital, London, and an authority on tumors, died.
"Error of opinion may be tolerated where reason is left free to combat it"—Jefferson

21 ♐ S — 1908—Under the White Phosphorus Prohibition Act, the brilliant discovery of phosphorus sesquisulphide, an innocuous substitute for phosphorus, was made in France. Made it possible for the Berne Convention in 1906 to prohibit white phosphorus in manufacturing of matches.

22 ♐ M — 1788—Before Percivall Potts, for 42 years surgeon of St. Bartholomew's Hospital, departed this life from pneumonia, he said: "My lamp is almost extinguished. I hoped it has burned for the benefit of others." It may be said he was England's first industrial surgeon.

23 ☽ Tu — 1642—Isaac Newton born in Woolsthorpe, Lincolnshire, England. One of the foremost thinkers the scientific world has ever known.
1835—David Hossack, M.D., Professor of Materia Medica of College of Physicians and Surgeons, died at New York.

24 ♑ W — 1809—Ephraim McDowell, of Danville, Kentucky, operated on Mary Crawford—the first successful ovariotomy in the world.
"I seek the truth, by which no man was ever injured"—Aurelius

25 ♑ Th — 0—A.D.—Jesus Christ was born at Bethlehem, in Judea.
1821—Clara Barton born at Oxford, Massachusetts. A nurse and welfare worker in the Federal Army Hospitals during the Civil War. In August, 1881, she founded the American Red Cross Society at Washington.

26 ♑ Fr — *"How shall I talk of the sea to the frog, if he has never left his pond? How shall I talk of the frost to the bird of the summer land, if he has never left the land of his birth? How shall I talk of life with the sage, if he is the prisoner of his doctrine?"—Chuang-Tsu*

27 ♑ Sa — 1822—Louis Pasteur was born in Dole Jura, France. Founder of the science of bacteriology.
1856—William Budd, an English physician, established the contagiousness of typhoid fever. His book on typhoid is a classic.

28 ♑ S — 1895—Wilhelm Konrad Roentgen announced to the Wurzburg Society his discovery of the x-ray.
"If we live truly, we shall see truly. It is as easy for the strong man to be strong, as it is for the weak to be weak"—Emerson

29 ♑ M — 1919—Sir William Osler died at Oxford, England. Regius Professor of Medicine, University of Oxford, and first Professor of Medicine, Johns Hopkins University.
"Men of age object too much, consult too long, adventure too little, repent too soon"—Bacon

30 ♑ Tu — 1889—A. Laveran, Professor of Medicine, School of Val de Grace at Academy of Sciences, announces the existence of the haematozoon of paludism. Was given the Brant Prize.
"He that despiseth small things will perish little by little"—Emerson

31 ♑ W — 1900—Sir William M. Bayliss, 1860-1924, an English physician, with E. H. Starling (physiologist), investigated the movement of the large intestine.
"No change of circumstances can repair a defect of character"—Emerson

XUM

INDUSTRIAL MEDICINE AND SURGERY

DECEMBER, 1952

The Education of the Industrial Physician

I. CATERPILLAR TRACTOR COMPANY'S TRAINING PROGRAM

HAROLD A. VONACHEN, M.D., Medical Director
MILTON H. KRONENBERG, M.D., Assistant Medical Director
Caterpillar Tractor Company, Peoria, Illinois

IT HAS been well said that "industrial medicine is taught in the school but it is learned in the plant." More than aphorism, the statement wraps up the past and lays it in the lap of the present. The accumulated wisdom and experience of the 50 years of industrial medicine in this country—from the tentative beginning of repair to the assured finality of prevention, from the technique of the earliest surgery of trauma to the rationale of the latest psychiatric interview—all are crystalized in what the schools impart.

These things had to be learned in the plant—that was the past. Now they are being taught in the University—that is the present. But progress isn't static. The future looms, in which industrial medicine will also be *learned* in the school and *taught* in the plant. That future is already upon us; indeed, it is five years old....

The School

IN SEPTEMBER, 1947, a three-year course of study leading to the degree of Doctor of Industrial Medicine was organized at the Institute of Industrial Health within the Graduate School of Arts and Sciences at the University of Cincinnati. The academic center of the Institute is the Kettering Laboratory, Department of Preventive Medicine and Industrial Health in the College of Medicine. An important part of this course is in-plant training. In the second year one day each week is spent in a plant; the third year, full time, is given to this phase. The physician is hired by industry as a member of its Medical Department. Directed training is carried out in the Medical Department, and in the relationships of the Medical to other departments.

Early it was realized that the Medical Department selected for in-plant resident training would have to qualify in numerous respects. Sufficient over-all activity and diversity of interest to warrant candidate assignment were the first requisite. Next was the possession of adequate equipment and resources, including hospital, laboratory, and library facilities, together with other related training conveniences. Equally important would be the background and qualifications of the company personnel, both medical and non-medical, and their ability to direct and supervise, enlighten and stimulate the candidate in training, as well as to impart information in the manner of good teaching. Over all, the course of study, or duty, planned for the trainee and the activities arranged for him would be both practical and workable—centered around a definite and organized plan, and not on any casual day-by-day basis. The circumstances and setting of the Medical Department and its program would also comprise sufficient free association between the trainee and the functions and activities of every division, department and section of the company, so that he might understand the intangibles which identify and distinguish the well organized industrial health program in operation. Then, also, there would be the personal equation in the plant group, to adopt the trainee at once as a member of the Company Team, and never look upon him as a medical DP.

There is no lack of Medical Departments possessing these qualifications. In any one of them it will be expected that the trainee with the proper personal qualities and the makings of a real industrial physician soon will learn the reasons underlying the management's medical policies; appreciate the scope and meaning of employee and labor relations as they affect the company operations; develop a sympathetic viewpoint toward the role of the supervisor, and the problems that daily confront the foremen on the line; and, in general, adjust himself to the industrial situation as a whole. As his training continues, he will assume major responsibilities, under proper guidance and direction. If there

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is a piece of investigative work or a research project in the making, he will become a participant; or, if a problem arises which he chooses to pursue, and it is feasible and may be considered a contribution to industrial medicine, he will be given every assistance. Above all he will be encouraged to express himself. The plant and community contacts arranged for him will be for purposes of orientation, personal observation, participation, consultation, discussion. His base of operations will be the Medical Department.

This is cast in the future: the trainee "will ...." But, as before noted, the future is already upon us, and, at Caterpillar Tractor Company, Peoria, Illinois, the future is five years old.

Caterpillar's in-plant resident training program for physicians now has in training for industrial medical work its fifth Fellow from the Institute of Industrial Health of the University of Cincinnati. For his predecessors, four of them, the future insofar as this training course is concerned, has become the past. They have fulfilled the expectations held for them. They were taught in the University, and they learned in the plant. But in a degree that only the Medical Director who had to create his own Medical Department can appreciate, they also learned in the University, and were taught in the plant.

Introduced now is our fifth Fellow, as he learns and is taught at Caterpillar....

The Plant

CATERPILLAR'S in-plant resident training program is a part of the responsibility of the Company's Medical Division. Its objectives are:

1. To make the physician feel that he is a member of the Caterpillar Team;

2. To give him a thorough knowledge of the principles, responsibilities and activities of the Medical Division; and

3. To furnish him the opportunity to become familiar with the nature of the work performed by all the departments into which the company's varied operations are divided, together with the integration of these departments and their operations into the things Caterpillar produces.

Going into the Caterpillar Medical Division, the trainee-physician is welcomed as a unit of the Team. Following his introduction to the members of the Medical Staff and to the administrative and department heads, he is given a badge which permits him to enter any area of the plant day or night; has his car assigned to a reserved parking place; is furnished his own private office, with his name on the door; is put on mailing lists to receive all company communications which are sent to members of the management staff either at the plant or at home; has his named placed in the company phone book; and is entered on the payroll for salary purposes. Next, he is given definite responsibilities in the Medical Division; is told that he is expected to attend, at company expense, meetings of medical associations and groups related to his work; and is extended a once-for-all invitation to management functions.

Medical

THUS the young physician is identified with the Medical Division, and starts in to become familiar with its principles, responsibilities and activities. Day by day he learns, first-hand, the techniques of employee medical services as to:

1. *Physical examinations:*

Pre-employment, for placement purposes;

Periodic, based on the hazards of the job;

Return-to-work, after illness or injury;

Key examinations, as of the executive group;

Request examinations, as they relate to occupations; and

Special examinations, such as medical appraisal for placement in relation to vehicle operators, crane operators, grinders, chippers, cold-room attendants, engineers, and others.

2. *Illnesses and injuries:*

First aid; medical and surgical emergencies; care of trauma; hospitalization of cases; hospital visits and follow-ups.

Occupational illnesses; analyses, work-ups, and evaluations.

Non-occupational illnesses and injuries; emergencies, and referrals, as to family physicians.

X-ray interpretations—skeletal, chests, etc.

Physical therapy; selection of cases; handicapped program.

3. *Employee contacts:* consultations on health problems, referrals, leaves of absence; job transfers for medical reasons, appraisal and evaluation; health education—articles and lectures, foremen conferences, company publications.

4. *Industrial hygiene:* environmental studies, laboratory procedures, control measures, air pollution studies in plant area and outside.

5. *Mental hygiene:* testing, personality profiles, consultations, referrals.

6. *Administrative matters:* Medical Division expenses, medical records and files, office procedures; staff meetings and discussions; nurse services and duties; specialist consultations and referrals; screening projects—tuberculosis and V.D.—official agencies, local and state.

The day-by-day volume of the Medical Division's activities is suggested in the facts that visits to the Medical Division for treatment purposes, mostly first aid, average about one a minute, the physical examinations about seven per hour, and the X-ray exposures more than 12 per hour during each working day. The figures for a typical year (28,000 employees) are as follows:

Physical examinations	17,304
Dispensary (first aid) cases	129,780
X-ray exposures	35,412
Urinanlyses	14,099
Blood examinations	13,876
Physiotherapy treatments	2,697
Industrial Hygiene activities:	
Request investigations	267
Dust counts	286
Water, milk, and food tests	444

Chemical analyses	513
Ventilation appraisals	2,352
Mental Hygiene activities:	
Number of persons tested	19,981
Regular applicants	18,235
Training applicants	1,267
Total number of tests given	68,847
Pre-employment consultations	3,225
Employee consultations	685

Watching the Medical Division at work in these things which are its primary responsibility, the trainee-physician sees what is done, and learns how it is done, and why. Gradually he becomes a participant, and before long he is handling cases and situations on his own. They are his to do, and he teaches himself in the doing. But at the same time he is learning the great lesson every physician must learn before he can be an *industrial* physician. He begins to understand that industry is a complex organism—a huge brain, with a multitude of nerve centers, each connecting with all the others, and every one dependent upon the human for its activation; that the health of this organism is measured in terms of its efficiency in the discharge of the purposes for which it exists; that this efficiency is the sum of the efficiencies of the humans who are doing the work; and that each of these efficiencies depends upon the health of that human. It is an interesting concept—industrial health, in products, dollars, success, dependent on aggregate efficiency: aggregate efficiency in turn dependent on individual health. The term "health" comes to mean well-being; and the "case" evolves from the patient with symptoms to the whole man, doing a job. The young physician, grasping this concept, begins to realize that there is hardly any phase of management that does not involve human beings in one way or another that affects their physiological well-being. When he arrives at the point where he can recognize that the man's job may sometimes be the chief constituent of the man's symptoms, he is a long way on his road toward becoming an *industrial* physician.

Meanwhile he is learning another, and a vital, lesson. It is quickly apparent to him that the things with which the Medical Division is primarily concerned do not engage its attention in any listed order. They come as the hours bring them. But he sees that, whether one, or another, or several at once, they all present themselves with confidence that the problems implicit in their need will be speedily and satisfactorily solved. Why that confidence? It expresses the physician-patient relationship in its finest form. But it had to be earned. There is a strong history behind it—the day-by-day history of professional skill and integrity selflessly applied. It must never be let down. Here is the most intangible and yet the most important lesson of the young physician's in-plant year . . . .

At this point in the trainee-physician's education at Caterpillar, it may be said that the first and second objectives of the training program are well along toward realization. He has become a member of the Caterpillar Team; and he is cognizant of the principles, responsibilities and activities of the Caterpillar Medical Division. However, the third objective—opportunity to become familiar with the Company's departments and operations—has not been as deferred in fact as it seems in description. It has had no timing, no scheduled order, but has permeated each day's interest since the training began. This man from the machine shop, that one from the proving grounds, another from Export, still another from Sales—these inspire the queries that are answered in gradual acquaintance. Description, therefore, can only set forth the scope, in terms of where the Company's operations relate to the responsibilities and activities of the Medical Division. The physician will educate himself as to what that relation is, and why it exists.

Employee Relations

PERSONNEL: The Medical Division is one of the nine Divisions in the Employee Relations Department. Next in the order of the trainee's attention, might be the Personnel Division. Here the young physician meets the Personnel Director, and becomes acquainted with the Organization Chart, which sets forth the purposes and responsibilities of "Personnel." Through the Employment Manager he learns about the procedures for hiring office employees, factory employees, and former employees, such, perhaps, as those returning from leaves for military service; the procedures for transfer of employees from one job to another; the methods of recruitment, including advertising, and coordination with the state employment offices; the placement of handicapped employees; and the employment practices in general as they relate to young, old, handicapped, and minority group people and displaced persons. In conferences with the Personnel Office Supervisors he becomes familiar with the maintenance of hourly employment and weekly salary records; the Merit Rating System and the use of Progress Reports; the records necessary to enter an employee on, or remove one from, the payroll; the service emblem control; how length of service and seniority are figured; the maintenance of the post-index where 27,500 names are kept in a visual file; transportation coordination—parking lots, public transportation facilities, and private cars; the financial problems of employees; personnel record card maintenance and surveys, and review of the kinds of information available from these; unemployment compensation; military leave practices with respect to reservists and selectees; and attendance control—absentee investigations, reports, and leave of absence procedures. Then, to learn how new employees are inducted into the company service, he meets the Employee Relations Assistant, gets an explanation of the benefits programs, and, sitting with a group who are going through the induction process, he hears a talk on

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company practices and sees a colored movie showing all the Caterpillar products in action.

Insurance: Next in the Employee Relations Department is the Insurance Division which handles the company's group insurance, its retirement plan, and its workmen's compensation matters. Meeting with the Group Insurance Supervisor the physician studies the group insurance and hospitalization provisions, and learns how claims are processed. From the Retirement Plan Supervisor he learns about the contributory and non-contributory plans, how the Joint Board of Administration operates, and what follow-up is employed after retirement. Then, with the Workmen's Compensation Supervisor, he is briefed on how claims are investigated; how they are prepared for hearings; the place of the Industrial Commission in the workmen's compensation picture; and the nature of temporary and permanent disability payments.

Safety: Also in the Employee Relations Department is the Safety Division. This, like Personnel, has its own organization chart. With the Safety Supervisors the physician examines the safety inspection program, which comprises building and area inspections, operational methods, and legal code compliances. Then he studies the accident investigation procedures, which include the follow-up of all occupational injuries and the completion of the first aid cards, which in their aggregate are the basis of the safety statistics as they evolve from year to year. After a while he is ready for the safety education procedures, and here he learns of the monthly safety meetings and how they are prepared; the fact that he is to participate in them as medical representative; and the nature, extent and importance of safety publicity, as in company publications, on Jumbo Boards, and in the newspapers. Rounding out his acquaintance with the Safety Division and its purposes and responsibilities, he learns from the Safety Officer the company practices with respect to safety glasses and other safety devices; the eye-testing program for equipment operators; the methods of keeping safety records and making safety reports; and the operation of the Safety Store.

Restaurants: In the Restaurant Division, the Kitchen Manager explains his method of food preparation and delivery; how the equipment is maintained; the procedures whereby each cafeteria orders its own food; and the food store house. The Serving Manager takes him into the details of the operation and maintenance, and the personnel, of the eight cafeterias located throughout the plant; explains how the food is served and the candy stands operated; shows him the high standards and careful maintenance of restaurant cleanliness, and describes the coordination of the shop lunch periods. Then the Restaurant Accountant discusses with him the accounting system used by the restaurants, and its purposes and adaptations. Impressive is the fact that more than 18,000 meals are served in the Peoria plant cafeterias during each working day.

Employee Publications: The Employee Publications Manager acquaints the young man with the employee magazine, *News and Views*, and the local newspaper, *Caterpillar Folks*, and explains why there are the two, the policies of both, and their part in the general system of communications at Caterpillar—which includes management letters, letters and booklets to employees' homes, bulletins, board notices, etc.

Job Analysis: Conferring with the Job Analysis Manager he becomes acquainted with the job analysis program, the scope of this Division's activities, the system it uses, the types of area, industry and internal surveys made by it, and the preparation of wage and salary schedules developed from it.

Activities: Sports and hobbies are encouraged at Caterpillar, and, under the general direction of the Activities Manager they are scheduled and coordinated throughout the plant. The physician-in-training finds this an interesting area of potential usefulness.

Credit Union: Last of the Divisions of the Employee Relations Department is that devoted to the Employee Credit Union. The Secretary-Treasurer explains its membership, its investment and loan policies, its relationship with the company, how it operates, and the part it plays in a well-rounded industrial relations program.

Public Relations

CLOSELY identified with Employee Relations is Training and Community Relations. This Department organizes and conducts supervisor, craft, and apprentice training, and other training activities. In conferences with its Director, the physician learns about the part the Medical Division plays in the preliminary education of new supervisors, and in the selection and special testing of men for training courses.

Equally interesting is the other phase of this Department's work; it attends to matters involving the Company and the community. These include such things as the public plant visits, and the escort service which conducts the visitors; the mailing of "opinion molders" regarding Caterpillar to selected lists—physicians, dentists, educators, etc.; and the general activities through which Caterpillar does its part in being a good neighbor and member of the community.

Labor Relations

UP TO HERE, the physician, learning about industrial medicine, will have studied the Company's medical services and activities, and the employee relations in general, in terms of the employee individually. Now he looks in upon certain relations between the Company and the employees in which the latter appear collectively. In conferences with the Labor Relations Manager and his staff, he learns about union contracts, and how and when the Medical Division enters the labor relations area. He finds that

various subjects of medical significance are spelled out in these contracts, such as general working conditions, leaves of absence, pregnancy leaves, and union safety committee procedures; and that various other matters are handled under agreed policies, such as job assignments requiring medical approval, and treatment of non-occupational disabilities. Among the details, he learns, too, that transportation vehicle operators are given eye examinations, that their medical examinations are reviewed, and that stability tests are required of them before they take the wheel.

But more importantly, he becomes acquainted with the over-all labor relations policies, wherein the matters of procedure in this event or that, are worked out in ways that help to develop satisfactory practice. He may sit in during contract negotiations, if there are such during his training year. In any event, he learns the methods and meanings of communications to management and employees regarding union matters ....

The Whole Man, Doing a Job

HAVING NOW some acquaintance with industrial medicine in terms of the individual employee—"that human," upon whose personal efficiency the aggregate efficiency of the Company depends—the young physician, thinking of the employee as "the whole man, doing a job," becomes interested in the job itself. In his conferences with the Job-Analysis Manager, he found that Caterpillar employment has more than 800 separate job classifications. What are these? What does each man's job require of him? What does he do? What does his job do to him?

Caterpillar Tractor Company, in its four manufacturing plants, the principal one at Peoria, Illinois, produces heavy machinery—diesel engines, tractors, motor graders, and earth-moving equipment, such as bulldozers and scrapers, each of these in a variety of sizes, capacities and adaptabilities for use. The manufacturing processes include the full range of steps from raw materials shipped in to finished products shipped out. All products are designed, made, advertised, sold, shipped, and serviced. The Departments engaged in these operations extend from Engineering, to Accounting—from the drawing board to the customer's check. One by one, the young physician visits these Departments and confers with their managers. The order of his visits conforms to the opportunities for them; his time is adapted as may suit the occasion. When his visits are concluded he will have studied them as follows:

Purchasing: This department purchases materials, supplies and services; develops new sources of supply; and maintains follow-ups to see that materials ordered are on hand when needed. Conferences with the General Purchasing Agent concern the proper labeling of materials used and purchased; the toxic potentialities of new materials and supplies used by the employees; and the close cooperation required between the medical and metallurgical and safety people regarding the control of acids, explosive materials, poisons, etc., coming into the plant.

Manufacturing: Here the incoming production materials are received, inspected, and stored. Then they are treated to such operations as the product parts require—molding, casting, welding, heat treating, machining, etc.—and the integral parts are assembled, tested, painted, and, in the form of the finished products, secured on cars for shipping. This Department is responsible for such matters as quality, workmanship, scheduling, tooling, plant layout, time studies, and the maintenance and protection of plant property. Conferences with the General Factory Manager disclose that the Medical Division is of assistance in the selection of new supervisors; in solving personnel problems; in the design of machines to reduce vibrations and minimize noise; and in the control and maintenance of healthful and pleasant working conditions, as these relate to heating, lighting, ventilation, and freedom from dust and excessive noise.

Engineering: Here the Caterpillar products are designed, and specifications for their manufacture are prepared and supplied. Here, too, field service problems are analyzed, and engineering changes made for improvements in products. The young physician, in conference with the Chief Engineer, learns how safe features are engineered into the products; how special eye and lighting problems associated with close work on the drawing boards arise and are handled; and how the Medical Division may be useful in connection with equipment tests.

Sales: This Department establishes and maintains distributor and dealer organizations within the continental United States, Alaska, and Canada; and promotes the sale of Caterpillar products through distributor and dealer organizations in other parts of the world. Here, from the Director of Sales, the physician becomes familiar with how the Medical Division assists in the selection of sales personnel; and learns of the special health examinations and the immunization program for the export group.

Advertising: The primary purpose of this Department is to keep distributors, dealers, and potential customers informed concerning the company and its products and developments, through comprehensive advertising. In conference with the Advertising Manager, however, the physician learns about some of the other activities of the Advertising Department—its campaigns to reduce highway accidents; its news releases, local and nationwide, on health articles and related subjects; and the facilities it has available to make movies and slide films—among which are the heart-touching films showing how Caterpillar finds places for, and uses, handicapped people in happy jobs. In addition, the Advertising Department plays a prominent part in promoting sanitary land-fill methods of garbage and waste disposal.

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Parts: This Department analyzes parts service requirements, and stores and maintains a basic and emergency supply of service parts for Caterpillar products wherever they may be in use. These parts are made available to customers through conveniently located distributors and dealers. Here the General Parts Manager explains to the physician his particular interest in medical services for the eight Parts Depots throughout the U.S.; and discloses the fact that material handled—even in his department—is sometimes productive of medical problems.

Traffic and Order: Here are received the orders for prime products; here they are billed; and here their shipments from the plant are arranged and followed through. This Department also handles all matters pertaining to the transportation of materials and supplies into the plant. The physician learns from the Traffic Manager how the Department operates; how travelers are accommodated; and how the shipments of Caterpillar equipment on railroads and trucks are handled from the standpoint of safety. Among the special medical problems arising in this Department are those involved when a Caterpillar family is shipped into or out of the country.

Service: The Service Department trains distributors and customers in the operation and proper care of Caterpillar products; reports on field performances of the same; and administers the Company service warranty. The physician learns that the Service Manager has certain medical problems, such as special examinations and immunization for export service representatives and the problems arising when export groups come to Peoria to attend the service schools.

Research: The Research Department investigates new products, conditions, methods, and applications; develops new ideas of potential usefulness, and fosters improvement of all kinds. Conferences with the Director of Research, however, disclose to the physician that special medical problems are involved in the testing of products at the company-owned proving grounds. There are two of these, in Peoria, and in Arizona. At both of them dust, smoke, insects, and poison weeds have medical significance, in addition to which there are the necessary emergency treatments in cases of accident, and the medical examinations and care for the employees at the Arizona site. Research also involves the Medical Division in problems arising from cold-rooms; and it has control of the x-ray laboratory.

Accounting: This Department prepares the hourly and weekly payrolls, establishes costs as to products and processes, conducts internal audits, controls inter-departmental procedures, records the Company's financial transactions and compiles and issues its financial statements. In conference with the Controller, the physician finds particular interest in the tabulating machines. In addition to their usefulness in the preparation of payrolls, they turn out the first aid and injury statistics in forms useful to the Medical Division. Also interesting are the time-keeping practices as they affect employees going to the Medical Division for short and long periods.

Treasury and Office Service: This is the center of the financial transactions of the Company. This Department distributes paychecks, pays bills, and collects money due the Company. Also it is responsible for office services, such as telephone, telegraph, mail, messengers, stationery, supplies, etc. In addition to the part the Medical Division plays in recommending office equipment, such as stenographers' chairs, pads to stand on at counters, etc., the physician learns much from the Treasurer about the financing of distributors and dealers, expense accounts, and the financial arrangements involved in plant expansions.

Community Resources and Contacts: Last, but not least, the physician visits and studies, the Institute of Physical Medicine and Rehabilitation, the U.S. Employment Service, the Red Cross, the Veterans Administration, the Tuberculosis County Association, the County Tuberculosis Sanitarium, the Peoria Chest Clinic, the Peoria State Hospital, the Peoria City Health Department, the Visiting Nurses Association, and the Civil Defense Organizations. He attends the County Medical Society meetings, and, on occasion, is appointed the Company representative at meetings where Company cooperation with these agencies makes his presence advisable.

Summary

THE PHYSICIAN'S department visits and conferences have been briefed rather than described. And his trips to various parts of the plant to see what goes on there have been indicated rather than recorded. It has been emphasized, however, that foremost in the Caterpillar Physician Training Program is the opportunity to become acquainted with the whole enterprise in all of its ramifications. Never has this opportunity been neglected. Logically, it shouldn't be, because the young physician aspires to a Doctorate in *Industrial* Medicine, and industrial medicine isn't industrial until the novitiate knows his industry as well as his medicine—its processes and hazards, its administrative structure, its physical plant, its echelons of management and supervisory staff, the problems in human relations associated with it, and the distinctive expressions of executive ability that give it place and character. It is these things of which the well-being of the human element, *in terms of the individual human,* is the common denominator. Physicians in training can learn all of this at Caterpillar. When they leave, they are prepared to take positions as Medical Directors in industry—as the four who have completed their courses at Caterpillar have already done. It is not unreasonable to believe that when they have finished their Caterpillar training, they wonder how anyone can assume that education in pubic health alone is sufficient to qualify a physician for a career in industrial medicine....

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II. THE CASE STUDY METHOD ADAPTED TO IN-PLANT TRAINING IN OCCUPATIONAL MEDICINE

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CHALLENGING to both the educator and the industrial medical practitioner has been the problem of methodology in the in-plant phase of training in occupational medicine. Efforts toward a balanced schedule of learning in industrial plants have been seen, and various concepts of the curriculum in industrial health have been reported.[1-10]

In rare instances, however, has the plant portion of the training paralleled the comparable years of graduate work in other specialties taken in accredited hospitals. It is this feature primarily—the lack of similarity—that has tended to slow the full establishment of an American Board of Occupational Medicine. Although certain professional organizations* have endeavored to clarify phases of the training program so that the recognition of specialty status in this area might obtain, no method of teaching which employs the case study technique has been proposed for use in industry. That such a method can be utilized in an industrial setting is the premise of this presentation.

Holistic Study

AS EXPERIENCE is gained in the hospital scene from a study of the ill individual—the "case"—so in industry can the individual worker be studied. In lieu of investigating the occupationally ill employee, the concept of holistic learning is offered. With the worker serving as the focal point of the training situation, the acquisition of industrial medical knowledge stems from a psycho-socio-physico-economic understanding of his relationships to his environment. Such an individual case study, encompassing the job-holder "in illness and in health," will provide information not only about the "patient," but afford the student opportunity to become familiar with the workings of the industrial society, the industrial organization, the industrial community, and the health services needed to integrate the individual into these areas of activity.

Methods of study would include, perforce, the following techniques: (1) Interview. (2) Periodical and text reference literature search. (3) Clinical examination. (4) Psychologic examination. (5) Clinical laboratory examination. (6) Environmental survey. (7) Environmental air analysis. (8) Job analysis. (9) Job performance appraisal. (10) Report preparation. (11) Medical care. (12) Individual and group discussions with intra-plant personnel. (13) Individual and group discussions with extra-plant personnel.

The student would obtain information pertinent to his exploration from interviews with the following personnel: (1) Worker. (2) Foreman. (3) General foreman. (4) Department head. (5) Division head. (6) Union steward. (7) Union president. (8) Insurance supervisor. (9) Safety department head. (10) Employment supervisor. (11) Wage standards supervisor. (12) Industrial hygienist. (13) Industrial hygiene chemist. (14) Industrial hygiene engineer. (15) Labor relations director. (16) Training supervisor. (17) Private physician. (18) Insurance underwriter. (19) State workmen's compensation representative. (20) Community agencies. (21) Consulting psychologist. (22) Consulting psychiatrist. (23) Consulting surgeon (or orthopedist, or dermatologist, or cardiologist, etc.). (24) Medical Director.

The Specific Job Study

IN APPLYING these techniques to acquire the information desired, the trainee would make his observations and carry through his program under the immediate guidance of the Medical Director who would ascertain that all facets of the "case study" are covered, and who would lead and assist the student in interpreting the data collected. It is assumed that a workable, if not full, knowledge of occupational medicine has been obtained at the academic level in a specialized department or graduate school. In the plant, the aim is to give the graduate an opportunity to experience at close hand the workings of the principles learned intra-murally at the university.

As an example to be followed through in this proposal, it is suggested that the specific job of machinist be studied. This is based on certain points in reasoning. The machinist in his occupational history has established a tradition; his is a well known trade; his craft organizational pattern and development have been newsworthy; his job is found in many kinds of shops and industries; his is a vital activity in the production and maintenance of consumer goods and services; his is a job done with pride; his is a kind of work that is spelling the success of newer industrial processes involving, for example, nuclear energy; his is a job with medical, social, psychologic, and economic connotations.

Through investigative and interviewing pro-

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*American Academy of Occupational Medicine and the American Foundation of Occupational Health, in addition to the INDUSTRIAL MEDICAL ASSOCIATION and the Council on Industrial Health of the American Medical Association.

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cedures the following would comprise the material to be covered, with the primary focus being the man-on-the-job in relationship to his environment.

I. The Company Organization.
- A. History.
- B. Number and type of plants.
- C. Size—population.
- D. Organization pattern.
- E. Raw materials used.
- F. End products.
- G. Markets (Sales offices, foreign representatives, etc.).

II. The Machinist—General.
- A. Definition.
- B. Job Description.
- C. History of the trade.
- D. History of the trade union.
- E. Contemporary position of the machinist in industry; labor outlook.
- F. Current methods of training: (1) Trade schools. (2) Night schools. (3) Armed services. (4) Secondary schools. (5) Apprentice training, job training.

III. The Machinist—Specific to plant.
- A. Number currently employed.
- B. Characteristics: mean age, age range, length of service, etc.
- C. Types of related jobs—job family.
- D. Areas of employment (departments, shops, etc.)
- E. Union contract provisions as they relate to machinists: (1) Pay scale. (2) Seniority. (3) Physical examinations. (4) Health and safety measures.
- F. History of grievances and/or labor-management negotiations or arbitrations involving machinists.
- G. Job analysis[13]: (1) Physical demands. (2) Environmental demands. (3) Psychologic demands.
- H. Possible job changes of the future through re-design of products, re-engineering of manufacturing processes, substitution of new materials, demands of new markets, or establishment of wartime economy.

IV. Procurement of a New Machinist.
- A. Method of request by foreman for additional machinist.
- B. Action taken by general foreman, department head and division head.
- C. Preparation of personnel action records by Personnel Department.
- D. Review of request for compliance with personnel ceiling, budget limitations, or current hiring policy.
- E. Recruitment: (1) Review of applications on file. (2) Through newspaper advertisement. (3) Through trade journal advertisement. (4) Through job bid procedure. (5) Through employment agency. (6) Through U.S. Employment Service. (7) Through State Office of Vocational Rehabilitation. (8) Through efforts of employment-interviewers on special recruiting trips.
- F. Completion of application for work.
- G. Interview of applicants: (1) By employment interviewer. (2) By foreman.
- H. Method of job offer.
- I. Additional hiring action: (1) Moving expenses: (a) Household goods. (b) Family. (2) Housing.

V. Processing and Placement of the New Machinist.
- A. Completion of employment documents.
- B. Authorization for physical examination.
- C. Physical examination: (1) Physical examination—organ inventory. (2) Visual acuity determination. (3) Audiogram. (4) Vital capacity.
- D. Psychologic examination: (1) Personality appraisal tests. (2) Psychometric tests.
- E. Laboratory examination: (1) Complete blood count. (2) Urinalysis. (3) Serodiagnostic test for syphilis. (4) Sedimentation rate. (5) Electrocardiogram. (6) Ballistocardiogram. (7) Chest film. (8) Spine film.
- F. Interviews with consultants.
- G. Determination of classification:
  1. By matching of physical findings (capacities) with physical demands of job.
  2. By matching of emotional fitness with psychologic demands of job.
  3. By comparison with physical standards, if used.
- H. Recommendation to Personnel Department as to physical and emotional qualifications of applicant for job as machinist.
- I. Immunizations.
- J. Follow-up of specific work restrictions to foreman, safety department, etc., if candidate is physically handicapped.
- K. Referral of applicant, if rejected on physical grounds, to the Office of Vocational Rehabilitation (as applicable).
- L. Recommendations regarding special devices on job—high stool, change of pedal, etc.—if applicant handicapped.
- M. Arrangement for special transportation, if handicapped, in civil defense or disaster evacuation planning.

VI. Follow-up of Placement of Machinist.
- A. Short term follow-up: (1) Physical adjustment to job. (2) Emotional adjustment to job.
- B. Long term follow-up: (1) Company receiving a day's work? (2) Machinist's needs being met? (3) Review of absenteeism record. (4) Review of illness record. (5) Review of injury record. (6) Review of employee's participation

in recreational activities. (7) Job evaluation by foreman. (8) Review of history of merit increases. (9) Visit to machinist's home: (a) family composition; (b) adequate housing; (c) hobbies; (d) health of family; (e) emotional tone of home.

VII. The Healthy Machinist at Work.

A. Health hazards—types:

1. Dust: (a) *Metals:* (1) steel; (2) stainless steel; (3) brass; (4) bronze; (5) copper; (6) lead; (7) aluminum; (8) beryllium; (9) tantalum; (10) thorium; (1) uranium.
(b) *Plastics:* (1) polyethylene®; (2) teflon®; (3) plexiglass®; (4) fluorothene®; (5) polystyrene®; (6) bakelite®.
(c) *Glass.*
2. Dermatogenous hazards: (a) cutting oil; (b) lubricating oil; (c) Prussian Blue oil pigment for marking.
3. Ventilation.
4. Illumination.
5. Radiant energy.
6. Noise.
7. Abnormal air pressure.
8. Temperature.
9. Humidity.
10. Infections.
11. Repeated motion, pressure, shock.

B. Health hazards—toxicity:

1. Identification of materials; (a) labels; (b) trade name index; (c) contact with manufacturers.
2. Clinical syndromes.
3. Treatment of absorption and/or intoxication.

C. Safety hazards: (1) Types of power tools. (2) Moving parts. (3) Housekeeping. (4) Metal chips and spirals. (5) Lifting. (6) Cutting surfaces. (7) Hand tools. (8) Accessory equipment: (a) stools; (b) ladders; (c) platforms; (d) cranes.

D. Psychologic hazards[14]:

1. Intense utilization of a limited range of worker's equipment.
2. Fragmentation of job.
3. Job's failure to require full participation of worker.
4. Tempo of job at variance with natural speed of worker.

E. Sociologic hazards.

1. Composition of work group: (a) differing racial components; (b) differing religious components; (c) differing geographic components; (d) differing sex components; (e) differing age components; (f) differing educational components.
2. Impaired interpersonal relations: (a) between supervisor and worker; (b) between worker and worker; (c) between group and other groups.
3. Impaired communication: (a) vertical—up; (b) vertical—down; (c) horizontal; (d) verbal—individual; (e) verbal—group; (f) written.
4. Individual and group status: (a) intra-group; (b) extra-group.

F. Sanitary hazards.

1. Washing facilities: (a) lavatories; (b) showers; (c) soap; (d) towels.
2. Waste disposal facilities: (a) toilets; (b) urinals; (c) trash receptacles; (d) sewage disposal.
3. Water supply: (a) drinking fountains or water coolers; (b) quality of treated and process water.
4. Eating facilities: (a) bag lunch room; (b) canteens; (c) cafeterias; (d) vending machines.
5. Personal services: (a) lockers.

G. Control methods.

1. Clinical control: (a) periodic health interview; (b) periodic physical examination.
2. Clinical laboratory control: (a) periodic urine examinations: (1) routine analysis; (2) special ionic analysis. (b) Periodic blood examinations: (1) routine examination; (2) special ionic analysis. (c) Periodic x-ray examinations. (d) Periodic pulmonary function studies. (e) Comparison with standards.
3. Chemical laboratory control: (a) methods of sampling of workroom air: (1) direct; (2) indirect; (3) qualitative; (4) quantitative. (b) Methods of dust counting. (c) Methods of chemical analysis. (d) Maximum allowable concentrations.
4. Industrial hygiene and industrial hygiene engineering control: (a) exhaust ventilation—control at point of generation; (b) general ventilation; (c) dilution ventilation; (d) substitution of less toxic materials; (e) isolation of contaminating processes; (f) housekeeping methods; (g) wet methods; (h) protective or barrier creams; (i) hand cleansers; (j) respiratory protective devices.
5. Safety engineering control: (a) protective clothing; (b) occupational eyewear; (1) protective safety spectacles (plano); (2) corrective safety spectacles (prescription ground); (3) lenses for specific job (glassblowing, silver soldering, etc.); (4) eye shields; (5) face shields; (6) goggles; (7) masks (with corrective lens inserts). (c) machine guards; (d) two hand controls; (e) gloves; (f) protective footwear; (1) shoes; (2) toe protectors; (3) shin guards; (g) safety devices for

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accessory equipment; (h) safety showers; (i) identification of service lines; (j) warning signs; (k) emergency eye wash fountains; (l) safety meetings; (m) inspection and evaluation; (n) contests and awards; (o) tool maintenance by tool room attendant; (p) electrical guarding; (q) machinery arrangement.

6. Social engineering control:
(a) Fringe benefits: (1) sick leave; (2) personal leave; (3) vacation plan; (4) holidays; (5) retirement plan; (6) bonus plan; (7) profit-sharing; (8) personal savings plan; (9) insurance plans: (a) group life insurance; (b) group health and accident benefit insurance; (c) hospitalization insurance; (d) workmen's compensation; (10) employees' sales store. (b) Grievance procedures. (c) Suggestion system. (d) Disciplinary procedures. (e) Recreation: (1) intra-plant athletic programs; (2) extra-plant athletic programs; (3) social recreational activities; (4) employee organizations, clubs, etc. (f) Plant newspaper. (g) Communication: (1) group meetings; (2) bulletin boards; (3) annual reports; (4) plant manual; (4) booklets; (6) letters. (h) Credit unions. (i) Banking facilities. (j) Blood bank. (k) Housing office. (l) Employee relations activities: (1) referral to local welfare agency; (2) referral to Travellers Aid; (3) referral to American Red Cross; (4) home visits; (5) hospital visits; (6) Children's summer camp; (7) Christmas party for employees' children. (m) Freedom to report to Health Division. (n) Educational program—unrelated to job. (o) Supervisory training in human relations.

7. Health maintenance engineering:
(a) Follow-up physical examination: (1) executive examination; periodic examinations; (3) post-illness examinations; (4) job transfer examinations; (5) special periodic examinations of cardiac, diabetic, epileptic, orthopedically impaired, visually impaired, etc., workers. (b) Case-finding procedures: (1) Multiphasic screening: (a) chest x-ray; (b) serodiagnostic test; (c) complete blood count; (d) urinalysis; (e) weight; (f) electrocardiogram; (g) ballistocardiogram; (h)visual acuity determination; (i) audiogram; (j) health questionnaire; (k) blood sugar determination. (c) Health education: (1) Verbal: (a) talks to employees related to machinist and his job; (b) orientation program for new employees; (c) health counseling at time of physical examination; (d) talks to supervisory groups. (2) Written or visual: (a) health pamphlets of value to machinist; (b) health posters pertinent to machinist; (c) exhibits of value to machinist; (d) motion pictures.

VIII. The Ill or Injured Machinist.

A. The Occupationally Ill or Injured Machinist.

1. Medical care: (a) Plant dispensary: (1) care by physician; (2) care by nurse. (b) Referral to specialist. (c) Transportation of injured worker. (d) Hospital care. (e) Convalescence. (f) Rehabilitation. (g) After illness return to work examination and classification.

2. Medical care administration: (a) Entry in clinical record. (b) Clinical photography. (c) Report to Safety Department. (d) Report to Insurance Section. (e) Report to supervisor. (f) Report by consultant. (g) Inclusion in statistical reports.

3. Other administrative procedures: (a) Report of injury by foreman. (b) Investigation of accident and report by Safety Department. (c) Reports (statements) of witnesses. (d) Report to Workmen's Compensation Insurance carrier by Insurance Section. (e) Report of Safety Department to company's Safety Director. (f) Initiation of Health and Accident Insurance benefits. (g) Report of carrier to State Department of Labor or State Workmen's Compensation Fund, or equivalent agency. (h) Inclusion of injury data in Safety Records. (i) Final insurance lump sum settlement if permanent disability results. (j) Report of case history for circulation to other Medical Departments of the company.

B. The Non-Occupationally Ill or Injured Machinist.

1. Medical care—same as VIII A 1a-g.

2. Medical care—adjuvant services: (a) Referral to community agencies; (1) Welfare Department; (2) American Red Cross; (3) National Society for Crippled Children and Disabled Adults—local chapter; (4) National Foundation for Infantile Paralysis—local chapter; (5) American Cancer Society, Inc.—local chapter; (6) National Tuberculosis Association—local chapter; (7) procurement of blood donors for transfusion.

IX. Miscellaneous:

A. Job termination procedures:

1. Types of termination: (a) reduction in force; (b) lay-off; (c) medical reasons; (d) disciplinary reasons; (e)

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inter-plant transfer; (f) voluntary resignation.
2. Benefits granted.
3. Termination physical examination: (a) See V. C and E above.

B. Review of current research.
1. Pulmonary dust diseases.
2. Occupational dermatitis.
3. Accident-proneness.

C. Planning of research problem.
D. Comparison of Health Division morbidity figures with national data.

Comment

THE program outlined in the foregoing sections envisions active participation by the Resident or Fellow in Industrial Medicine. He will learn of the milieu into which the employee is coming, and he will follow the new worker through every phase of his occupational effort both in the plant, and in his community relationships.

With this total knowledge of the methodologies employed by the company in their procurement, indoctrination, and utilization of workers, the student will understand his Medical Department activities with a new significance. The man presenting himself for care in the dispensary, because of this new take-off point in physician-employee relationships, will be an individual more meaningful to the young practitioner.

The time-honored schedules of resident training in the plants need refurbishing, for the two weeks in Industrial Relations or the two weeks in Labor Relations need to come alive through a person-centered study program. This rejuvenation, it is believed, is offered here to humanize industrial medical in-plant training, through focusing the program on the worker—in this example, the machinist—and may spell the difference between successful learning leadership and unsuccessful pedagogy.

Summary

1. TRAINING programs in industrial medicine at the plant level have not paralleled hospital residencies in the other specialties in their case study method.

2. Through a study of the whole man, in this proposal a single worker—"the case"—hospital style training can more nearly be approximated.

3. The method of study would include interviews, literature searches, physical, laboratory, psychologic, and environmental examinations, medical care procedures, and individual and group discussions—all designed around the worker example.

4. The selection of the job of machinist for this study is justified by the present importance of this craft in today's industrial effort.

5. The program as outlined, would include as major subjects, the following:

A. The Company Organization.
B. The Machinist—General.
C. The Machinist—Specific to Plant.
D. Procurement of a New Machinist.
E. Processing and Placement of the New Machinist.
F. Follow-up of Placement of Machinist.
G. The Healthy Machinist at Work.
H. The Ill or Injured Machinist.
I. Miscellaneous.

6. Special emphasis is given to the *hazards* of the job: Health, Safety, Psychologic, Sociologic, and Sanitary, and their *controls:* Clinical, Clinical Laboratory, Chemical Laboratory, Industrial Hygiene and Industrial Hygiene Engineering, Safety Engineering, Social Engineering, and Health Maintenance Engineering.

7. It is envisioned that this suggested program can be adapted to an existing teaching framework. If the Medical Director desires that extended training, for example, be given in process or laboratory studies, flexibility of time and program content will permit this or any other addition or substitution.

Conclusions

1. THE ADAPTATION of the case study method to in-plant training in occupational medicine is needed to hasten the recognition of specialty status in this discipline.

2. The method is practicable, and can be offered in any industrial plant where the rapport of the Medical Department with all levels of supervision, and with all workers is good.

3. The successful effectuation of such a program would be in direct proportion to the imagination of the Medical Director who would undertake explorations of this methodology.

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Industrial Medicine in an Optic Plant

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THE Anaheim Division of Northrop Aircraft, Inc., is an instrument production facility. It is intended that this facility will embrace the development and production of various types of instruments involving electronics, mechanics, and optics. Currently, the Anaheim Division is in a unique position in that it is the largest facility west of the Mississippi River which is producing optical instruments for the Army Corps of Ordnance.

A good industrial medical program for any large work establishment embraces features common to all. Nearly every large plant presents medical requirements somewhat peculiar to itself. At a plant producing optical instruments, there are unique requirements distinctly modifying the program. These unusual features chiefly are with reference to the eyes and vision of the workers there employed. Without, in this instance, describing the full program, only those medical activities of a special significance are here presented.

Screening New Applicants

EACH new employee is given an eye screening test, using the Ortho-Rater testing instrument which was developed by the Purdue University Industrial Foundation. It tests the vision of the applicants for far vision, near vision, depth perception, color perception, and near and far phoria, both lateral and vertical. If an employee has excessive phoria and/or no depth perception, he is limited from working in the Optical Department. If his vision does not measure up to the standards of his job profile he is required to obtain proper eye glasses or other corrective measures as prescribed by an eye specialist of his own choice, or is limited from working at that job. After obtaining his corrected glasses he is re-checked on the Ortho-Rater. A work limitation sheet will keep the applicant with excessive phoria and/or no depth perception from collimation, checking of parallax, and the use of double eye pieces in the Optical Department.

Training and Checking of Eyes

A STEREO Trainer is being used in the Optical Department for the training and development of eye muscles of employees who work on the various instruments. The employee is required to spend 15 minutes each day, in two divided periods, on this machine for development and to strengthen his stereo vision for the work he is required to perform. Past research shows this to be a benefit to the employee in off-the-job occupations as well.

Re-checking worker's vision: all optical inspectors and workers using eye pieces are checked every six weeks on the Ortho-Rater. Glass cleansers and mechanical workers are checked every three months.

Treatment of Eyes

PREVENTION of eye strain: each employee working on instruments is required to rest his eyes for 15 minutes out of each two hours.

Prevention of eye infection: a liquid soap containing G-11 is provided in all dispensers and each employee is required to wash his hands before returning to the job. Frequent washing of hands and keeping of fingers away from the eyes are stressed.

Treatment of eye infections: (1) the employee is taken off the job if it requires the use of eye pieces; (2) ophthalmic Bacitracin ointment is applied to the eye four times a day; (3) cold packs are applied to the eye for 10 minutes every two hours; (4) the employee is referred to an ophthalmologist if further care is deemed necessary.

What Makes a Good Job?

IT IS NOT generally recognized how close to the heart of the man in the shop working conditions really are. In a recent check-up, several hundred new employees were asked, "From *your* point of view, what do YOU think makes a good job?" Most frequent reply was that he had to "like the work"; second, that he wanted a "capable and understanding supervisor"; and third, "good working conditions." *Seventh* on the list was "pay."

—From "Contributions to Worker Health—Engineering Aspects," by W. G. HAZARD, Owens-Illinois Glass Company, at Industrial Hygiene Foundation's Seventeenth Annual Meeting, Pittsburgh, November 20, 1952.

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Cutting-Oil Dermatitis

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REVIEWING the literature covering cutting-oil dermatitis, one finds a countless number of articles dealing with this subject. In almost all articles, several points are unanimously agreed upon. It is agreed that approximately 70% of all reported occupational diseases in the United States are dermatoses, and at least 15% of these dermatoses are caused by cutting-oils.[1] It is also agreed that of the two types of cutting-oils —soluble and insoluble—it is the insoluble type that is the commonest cause of cutting-oil folliculitis.[2] These insoluble oils are used mainly as lubricants for decreasing the friction between the cutting tool and the working surface. In general, insoluble cutting-oils have relatively no water and are a mixture of petroleum oils, fatty oils, and small amounts of added chemicals, such as sulfur and chlorine, the latter of which give the oil specific advantages. Inhibitors may likewise be added to prevent rancidity.[3]

Fig. 1.
Cutting-oil dermatitis.

It is also generally agreed that these insoluble cutting-oils not only may irritate and cause drying and defatting of the skin, but if allowed to remain on the skin will harden in and plug the pores of the skin, leading to comedones, papules and pustules (Fig. 1), erythema, vesicular eruptions, furuncles, carbuncles, and granulomatous lesions. It is also well known that some of these oils may be even carcinogenic and thus lead to cancer of the skin.

Still further, it is agreed in all articles dealing with this subject that these cutting-oils should not remain on the skin for any great length of time, and the point is emphatically made that the skin must be cleansed of these oils to prevent future dermatitis.[4]

However, it appears that even with all the work done on this problem, it is still far from solved. There is evidence that cutting-oil dermatitis is still as prevalent (and as costly) in industry as it was a decade ago. This fact led us to postulate that, if the consensus is that cutting-oil dermatitis is due to oils plugging and hardening in the pores and that the best prevention is avoidance of skin contact or thorough cleansing of the skin, then investigation should be made as to whether the cutting-oils are actually being removed from the skin.

The initial step in our experiments consisted of obtaining three cutting-oils with fluorescent properties. These oils have the property of giving off visible light when illuminated by invisible ultra-violet light, and thus they could be detected by such a light when ordinary light would not reveal them. The filtered ultra-violet light would provoke fluorescence of minute quantities of these oils when they were not completely removed from the skin.

The procedure used in this study consisted of rubbing these fluorescent oils onto the forearm and then washing them off with various hand soaps, sand soaps, corn meal scrubbers, sulfonated oils, and several of the common household detergents. Fifty-two such cleansing agents were used; 14 of these having been gathered by one of us (C.C.M.) from various industrial plants. In the case of every cleanser used, examination of the skin after washing and drying showed that, while the skin appeared to be clean, it actually fluoresced when viewed under filtered ultra-violet light and thus clearly indicated that the fluorescent oil was still present on the skin

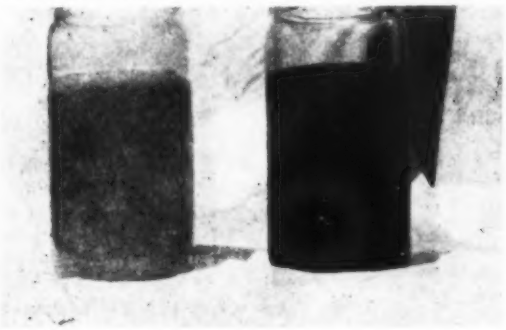

Fig. 2.
Bottle at right shows oil and grease removed from "clean" wipe rags.

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after each washing. Not one of the cleansers removed the oil so that all the fluorescence disappeared. To insure that all the cleansers tested were given a fair trial, after each testing the forearms were thoroughly cleansed of all remaining fluorescent oil, using a new skin cleanser ("Lixoil") which is as yet not on the market but which on repeated trial has been shown to remove entirely the fluorescence of all oils tested.

The results of our experiments, therefore, furnished us with adequate proof that the first and most important reason why so many cases of cutting-oil dermatitis have continued to prevail is that the cleansing agents used by industrial workers have failed to remove the oils from the skin.

SUPPOSEDLY clean wipe rags furnished by industrial plants to their workmen were also established as being hitherto unsuspected causes of oil eruptions. After being returned from the laundry, assumedly clean and free of oil, such rags have been distributed to workmen for reuse. However, when such "clean" wipe rags were washed in a cleanser known to be effective in removing oils, it was found that even immediately upon their return from the laundry they still contained hidden oil.

The failure of some industrial plants properly to protect their workers against the splattering of oil from old-style, obsolescent or obsolete machines was found to be another causative factor often in evidence. Even granted that it would be too expensive to replace these machines with newer types for the sole purpose of remedying this defect, it was noted that the obvious remedial step of supplying workers with protective sleeves or aprons had not been taken in many cases.

AN INTERESTING corollary of our study of oil folliculitis and oil dermatitis is that, having found 52 of the commonly used cleansers to be ineffective in eradicating cutting-oils from the skin of industrial workers, it was also established that ordinary acne, pimples and blackheads occurring on the skin of 'teen-agers could well be more successfully treated by the use of an efficient cleanser which could be counted upon to remove the natural oils causing the acne and blackheads without burning the skin. Many physicians and patients alike are prone to adhere to the commonly believed fallacy that blackheads are due to dirt, whereas they are in fact nothing but hardened human oil. The appearance of a thorough, efficient cleanser on the market should afford an effective prognosis in cases of ordinary acne as well as cutting-oil dermatitis, and its value can easily be substantiated by the use of the filtered ultra-violet light referred to above.

The study we have undertaken has also clearly indicated that all the tested cleansers, in addition to their failure to remove cutting and natural oils, have been deficient in removing other substances from the skin. In the practice of one of us (G.E.M.) ultra-violet light has disclosed multiple cases of dermatitis that have lingered on, apparently because widely advertised cleansers, faithfully applied by patients, have not removed the basic irritants. Coal tar, miscellaneous make-up creams, and ointments, including penicillin ointment, are among the substances which have been found still clinging to the pores of the skin of patients who were convinced they had been removed by cleansers, and which were also invisible to the naked eye of the examining physician.

The disclosure of present-day inability to clean the skin properly has led to our continued studies of other occupational dermatoses, in the course of which we hope to discover how many of the industrial chemicals actually are being removed from the skin.

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Noise

THE CLASSIC and best known example of the benefits of noise reduction is the study made by Aetna Insurance Company, of Hartford, Connecticut, a few years ago. The Aetna Company reported that as a result of lowering the noise levels of their offices, general efficiency rose 9.2%, typing errors decreased 29%, machine operators' errors, 52%, and employee turnover was reduced by 47%. The company concluded that it had effected net savings of $58.00 per employee in the first year.

—From "Noise—Its Effects and Costs" by SAM L. HOOPER, at Industrial Hygiene Foundation's Seventeenth Annual Meeting, Pittsburgh, November 20, 1952.

Treatment of Low-Voltage Burns

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UNFORTUNATELY the voltage which is present in an accidental electrical contact even though definitely known, is of no help in evaluating the damage done to the individual.

A large number of variables enter into the situation, most of them unknown, and of little help even if known. Owing to this fact, the prognosis of an electrical contact injury is one of the most difficult of all accidental injuries to determine and must always be guarded. Occasionally a patient who has been thus injured, sustaining what appeared to be a slight shock with or without a burn of some severity, may suddenly expire several days after injury, thus confounding the physician who may have reassured employer and family that the injury was a trivial one.

In discussing the variables, the first is the type of current, and it is considered quite axiomatic that alternating current is 300 to 400% more dangerous than direct current. Direct currents of 200 to 250 milliamperes may be borne without serious injury, whereas 70 to 80 milliamperes of alternating current may produce a fatal issue.

These figures are in turn dependent on the resistance of the body contacted by the current. Resistance both at the site of contact and within the body is important, as well as the size and type of electrode encountered. The skin of all parts of the body is the most resistant to electricity, and of this tissue the soles of the feet and palms of the hands head the list, the former offering as high as 100,000 ohms resistance, while a good calloused palm may offer 1,000,000 ohms. The moisture on the surface of the body makes a great difference to the skin resistance, perspiration decreasing the resistance greatly, and when submerged in water skin resistance may drop to 1,200 ohms. Still another variable is the distance between electrodes, and in consideration of resistance the point of entrance of the current as well as that of exit is important.

The pathway of the current is another variable, and has much bearing on the effects of the current. The heart is the danger area. Currents from one foot to the other are seldom fatal no matter how great, whereas a trifling current through the chest may prove fatal. Left hand contacts to opposite hand or chest and especially to feet are the most dreaded. One writer on the subject urges that those visiting power plants keep their left hand continually in a pocket.

Then, as in all disease and sickness as well as accident, there is the question of the individual susceptibility of the patient. Just as some people can lie down in a bed of poison ivy and enjoy a sleep with no evidence of trouble, so can some persons encounter a strong electric power line and escape everything but a slight nudge to remind them of their carelessness. If I am not mistaken, there have been cases reported where criminals have emerged from the electric chair unscathed even when contacts, current, and all other factors were as intended.

DEATH from electric current generally occurs from either ventricular fibrillation of the heart or a failure of the respiratory center or sometimes from a combination of the two.

When apparent death occurs from ventricular fibrillation, breathing continues, becomes exaggerated, then fails entirely after about two minutes and death ensues rapidly. Cardiac function stops and the patient is pale in color—not cyanotic.

On the other hand, with failure of the respiratory center the victim is unconscious and breathing is stopped, but the heart action continues. Fall in blood pressure is rapid. The patient is cold and cyanotic. Death ensues within 10 minutes unless artificial respiration is instituted. Incidentally, artificial respiration must be kept up for hours if need be until rigor mortis or post-mortem lividity begins to occur, or unless the victim is pronounced dead by a physician.

Then there are the delayed deaths, as mentioned, occurring minutes, hours or even days after the contact, due to sudden dilatation of the heart or internal hemorrhage in some of the vital centers.

The local lesions that occur as a result of electric contact may be trivial or extensive and, because of this fact, what the end result will be in each individual case can never be accurately foretold. A harmless looking surface burn may turn out to be deep, with charring of tissues clear through to and including bone. Often when these deep burns slough, alarming hemorrhage may suddenly result if a vessel of sufficient size is involved.

A sequel to the actual results of the electrical contacts, is the falls that result, and these often produce more shock, even to the extent of fatality, than the electrical contact itself.

So much for the morbidity resulting from these unfortunate accidents. Now, as to treatment, even less need be said.

FIRST of all, with due caution the victim should be freed from the contact as quickly as possible, though in many cases enough electromotive

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force is generated by the contact to throw him clear.

Artificial respiration should be started at once carefully and methodically. Operators should be changed often enough so that the procedure may be kept up for hours if need be without undue fatigue.

The recently accepted method of arm-lift resuscitation is by all means the easiest one, both for the operator and the victim, or, if the operator prefers, the Schafer method may be used, but resuscitation must be slowly and carefully persisted in until all question of life has been ruled out. In this particular type of case, mechanical respirators and inhalators are considered dangerous and their use is not advised.

Obviously, no method of artificial respiration will restore a fibrillating heart, even though some claim that a degree of cardiac massage is possible through the abdomen or chest wall.

As soon as possible hospitalization should be arranged, where oxygen and carbon dioxide may be of assistance in re-establishing normal respiration and other methods for combating shock may be available. Few if any drugs are of help in combating electric shock. Dr. Cecil Drinker, an outstanding authority, says caffein and sodium benzoate given intravenously may be of help, but relegates all other stimulants to discard in the case of electric shock.

While all these efforts are going on, care must be taken, if a local burn has resulted, to keep it as clean as possible. Nothing further should be done until hospitalization has been obtained. There the simple cleansing with soap and water and tanning with gentian violet 1% seem to be the most commonly used method. The burn should at all times be treated as a clean surgical wound.

Some surgeons have advised cutting out the burned area early, especially a flash burn which may be deep, but the great majority advise more conservative methods consisting of routine sterile dressing and nothing more until the slough has definitely separated.

Another complication which may add greater shock to the situation, results from extensive burns due to igniting the clothing, and the inability of a temporarily stunned or completely unconscious victim to do anything toward extinguishing such a fire.

One significant thing about electric burns is that the resulting toxemia is not nearly so severe as that seen in other types of burns, and secondary infection is much rarer. One should not forget to administer tetanus antitoxin if the burn is at all deep. The use of antibiotics would be indicated in a sloughing burn.

FORTUNATELY, electric burns are not too frequent even in power companies if proper precautions are observed, but when they do occur prompt treatment should be administered as outlined. Careful observation of the constitutional condition of the victim should be maintained until all question of untoward cardiovascular or respiratory failure is over, and careful surgical technique maintained in the care of the local lesions, followed up later if necessary in caring for contractures which may be disabling.

Specialists

A FRIEND of mine in another branch of the profession said to me recently: "You know, there's a lot of humbug about you chaps in industrial medicine. You're so concerned to sell yourselves as specialists that some of you have simply become high-powered salesmen. To my mind, it's nonsense to talk about industrial medicine, outside the narrow field of industrial toxicology—the thing you label that is just medicine: not a new thing at all." Is there any truth in this? In what sense is industrial medicine a specialty? Certainly not in the same sense as specialties dealing with particular parts or systems of the body, dermatology, E.N.T., orthopedic surgery, neurology, or those which use special tools and techniques—radiology, pathology. We need in our daily work to draw on these specialisms from time to time, and to have a smattering of some or all of them; but our real specialty is in the environment in which we practice our medicine.... In the industrial sphere, we can combine the techniques of the research worker and public health specialist with the clinical approach and experience of human problems of the G.P.... The G.P.'s opportunities of practicing preventive medicine are practically nil, while the M.O.H.'s facilities for practicing clinical and individual medicine are almost as limited. This is the first sense in which we have, I submit, a claim to call ourselves specialists; the second is that we are "specialists" in our own industries, knowing them intimately in a way no outside doctor can do.

—From the Comments of F. H. TYREE, in a "Symposium on the Future of Industrial Medicine," in *The Transactions of the Association of Industrial Medical Officers*, 2:2, 62 (July) 1952, London, England.

Primary Closure of Skin Defects
— Indications and Technique —

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IN THE past there has been a certain amount of reluctance on the part of some surgeons to attempt primary closure of many wounds, particularly those presenting a skin defect. Various reasons for this have existed, among which should be mentioned a prolonged time interval between injury and definitive surgery which leads to increased contamination of the wound with a higher incidence of infection. Inadequate facilities and a lack of understanding of the techniques of skin shifting and grafting undoubtedly have been responsible in some instances.

With present-day transportation and widely distributed first-aid and hospital facilities, almost all patients with skin defects resulting from accident can be given definitive surgical care within the six to eight hour safe period. Patients in shock are usually seen early, and adequate specific measures will usually improve the general condition to the extent that definitive surgery can be performed. The principles of thorough cleansing,

Presented at the June, 1952, meeting of the Chicago Society of Industrial Medicine and Surgery. Dr. KILBOURNE is Associate, Department of Surgery, Northwestern University, and Associate Attending Surgeon, St. Luke's Hospital.

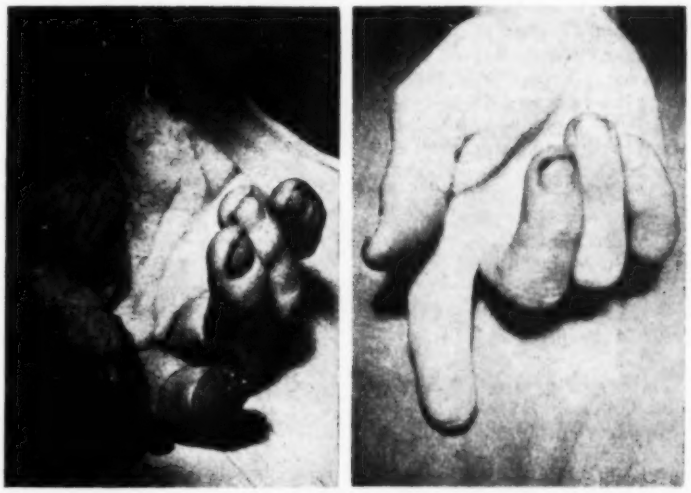

Fig. 1.
A traumatic amputation of the finger through the distal phalanx treated by an immediate split thickness skin graft. Healing was complete in two and a half weeks. At the right, the result is shown at four months.

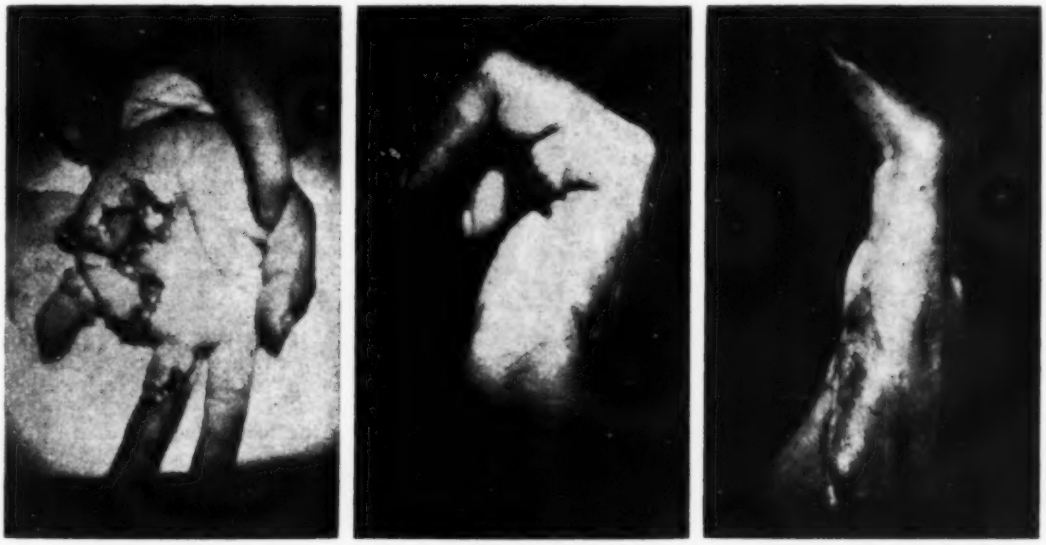

Fig. 2.
Extensive crush injury to hand before and after treatment. There was no possibility of saving the little finger nor could its fileted soft tissues be used as a flap. An immediate split thickness graft served so well, that no future revision was necessary.

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adequate excision of devitalized tissue, and complete exploration are recognized as the most valuable methods of avoiding infection. Prophylactic use of antibiotic and chemotherapeutic agents likewise favors primary wound healing.

These facts have enabled us to carry out safely in the majority of our industrial and civilian cases a primary closure of the open wound. In many instances, the use of free skin grafts or flaps has been invaluable. Only such adverse circumstances as lack of proper facilities, prolonged time interval, inability to accomplish adequate excision, or potentially treacherous wounds—such as human or animal bites—are contraindications to closure. The advantages of the primary closure are listed as follows:

1. Avoidance of infection.
2. Minimal edema and fibrosis.
3. Saving of exposed tendons and bone.
4. Prevention of protein loss and anemia.
5. Quicker convalescence.
6. Best ultimate function.

Although many avulsions or other injuries resulting in skin defects can be kept clean and delayed grafting carried out, if tendons or bone have been stripped of their soft tissue, some type of viable covering must be supplied immediately or the tendon will be lost and the cortical bone sequestrate. It, therefore, behooves the surgeon to have in his armamentarium the techniques applicable to these situations.

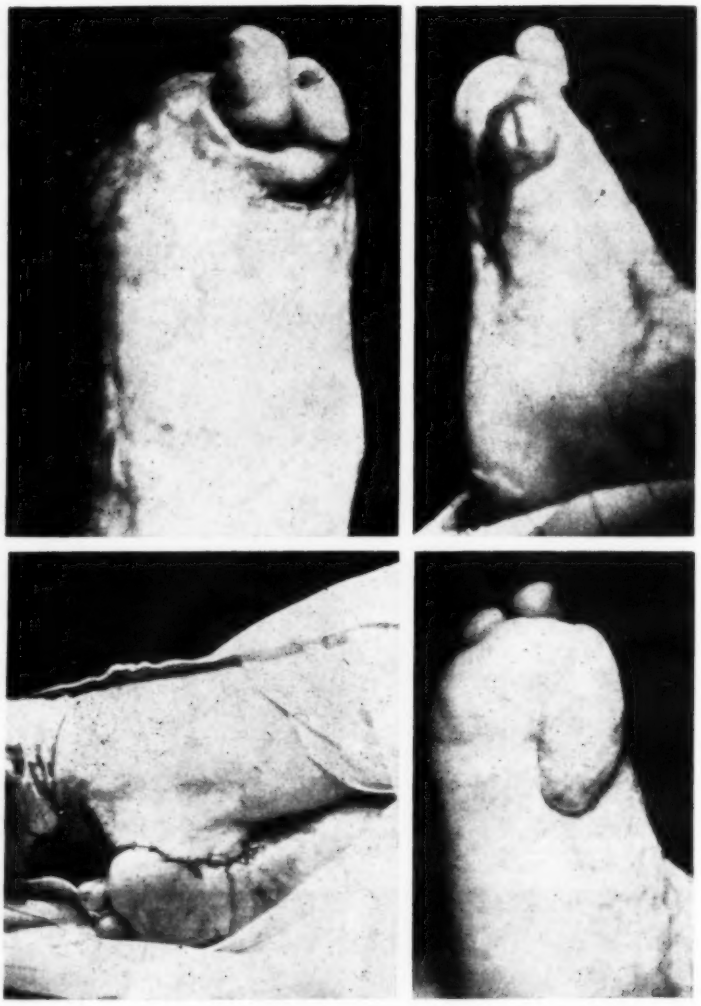

Fig. 3.
An extensive avulsion of the skin of the foot with traumatic amputation of three toes. A planter flap which had been sutured over the first metatarsal head did not survive. Upper pictures show the well healed split thickness grafts (in this instance cut free hand) and healthy granulations covering the metatarsal head. A secondary flap coverage is shown below providing an adequate pad for weight bearing over the bony prominence.

The treatment of wound complicated by a loss of skin fall into groups dependent on individual coverage requirements. Where there is adequate local skin and subcutaneous tissue available, so that by undermining, closure can be accomplished without excessive tension, this simple method should be used. If the defect is too large, and periosteum, muscle, fascia or subcutaneous tissue are present to provide a good bed, immediate free skin grafts are extremely useful. Where bare bone, bare tendon and joint structures are exposed, local or pedicle flaps are necessary. Good hemostasis is essential to the success of any method.

The technique of cutting free skin grafts has many variations. With little practice we can become proficient in the use of local anesthesia and a straight razor for small grafts. Finger tip amputations (Fig. 1) present a site to which, because of the relatively small area of exposed bone and the larger fat pad, a small split graft can be applied with a good result. A useful amount of nail is preserved, healing is prompt and length is saved. If the graft is sutured to the margins of the defect while oozing is controlled with a constrictor, an elastic adhesive pressure dressing will prevent hematoma formation. The pressure is best maintained for

Fig. 4.
At left is represented the technique of raising a flap for use as a pedicle graft of skin and fat. At right the use of a relaxing incision allows closure of the wound on the radial aspect of the wrist with preservation of exposed tendons. The defect created is covered by a split thickness graft. (Redrawn from Bunnell "Surgery of the Hand.")

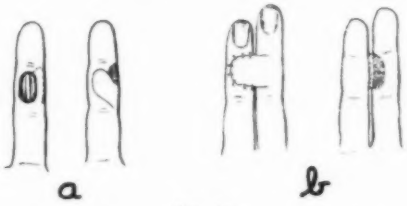

Fig. 5a.
For small avulsions, or grinds where tendon is bared, after complete wound excision and shaving of scored tendon, a local flap can be rotated from the lateral aspect of the finger and the lateral defect split grafted.

Fig. 5b.
A larger defect can be covered by a flap from an adajacent finger.

10 days. The results in these injuries have been highly satisfactory, numerous cases having been followed for at least 10 years.

The Padgett or Brown electric dermatomes have been helpful to us in cutting larger grafts. The Blair knife or razor can be equally effective. The graft should be thick enough to withstand handling, but enough corium should remain that the donor area can regenerate. Rarely will a full thickness graft be required. A better estimate of percentage thickness can be made from observing the donor site as cutting proceeds rather than from actual thickness of the graft. Medium thickness splitting of the skin leaves finely spaced bleeding points, and at deeper levels more widely spaced bleeding points with intervening white corium. Still more deeply the tufts of fat begin to appear, and we are too deep for a split thickness graft.

A wide variety of other defects including partial amputations of the hand (Fig. 2), avulsions of the skin of the foot (Fig. 3), leg and arm have been covered primarily by split thickness grafts in size up to 150 square inches. In such instances, after thorough soap and water cleansing and excision of devitalized margins and subcutaneous tissue, viable fat or muscle is sutured over bared tendon or bone, the skin margins are tacked down by interrupted sutures, bleeding controlled and the graft stitched into place. Small perforations of the graft are frequently desirable to allow escape of blood, air, and serum. Application of the dressing—usually a single layer of xeroform or petrolatum gauge and fluffs—must be done with care to conform to any irregularities, and be made sufficiently secure to prevent slipping. In some areas the marginal sutures may be left long and tied over a bolster of fluffed gauze insuring good pressure to the graft.

Better to illustrate flap techniques suitable for primary closures, Figs. 5 to 9 present common situations with adaptable techniques. Obviously, the success of local or distant flaps depends on the preservation of circulation in the flap as well as proper preparation of the recipient area. The length of single pedicle flaps for im-

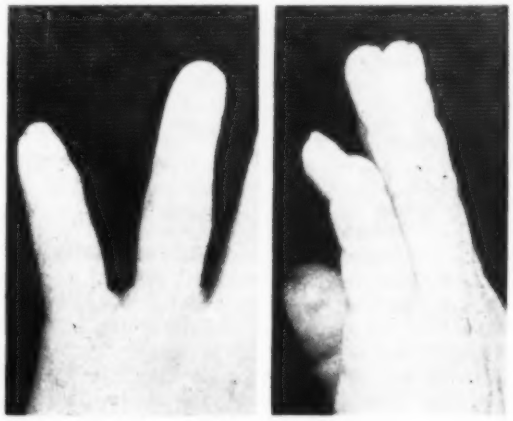

Fig. 6.
A dorsal defect in which the distal joint of little finger was exposed by a grinding injury, covered primarily, after excision of wound, by method 5b. There were few remaining tendon fibers but the flap was healed in three weeks, and no secondary revision was needed. It is pliable, and preferable to a fixed, badly scarred area which otherwise would have resulted.

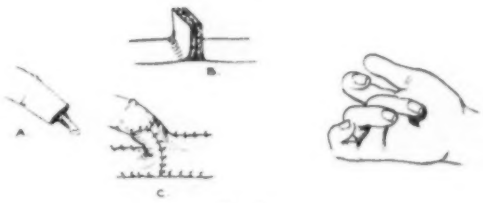

Fig. 7.
At left, a method described by Bunnell which can be used for immediate coverage of a complete avulsion of soft tissues from the distal phalanx. At right, the palmer flap for coverage of a finger tip amputation or avulsion. (Redrawn from Barsky's "Principles and Practice of Plastic Surgery.") We have been so pleased with the use of free grafts for this defect that we have not felt the palmer scarring to be worth the sacrifice.

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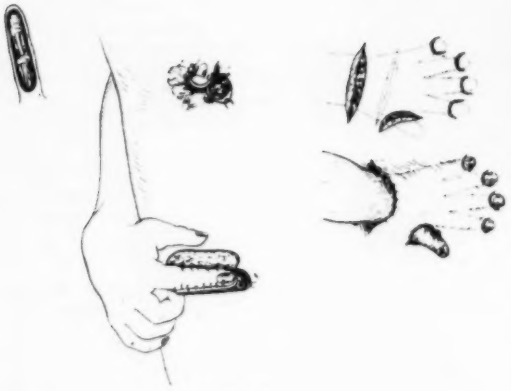

Fig. 8.

Left: Method of transferring an abdominal flap for primary coverage of the finger defect shown in upper left corner. A bolster of rolled up gauze is held in place by suturing through the flap. The same sutures may be used to close the defect of abdominal wall. The bolster provides good contact of the flap to the volar surface of the finger. Result of this method shown in Fig. 9. Right: The gauntlet type coverage of extensive deep avulsions of the hand is represented. (Redrawn from Bunnell.) UPPER FIGURE—wrist and dotted line incisions alone provide a smaller double ended flap for a more limited defect.

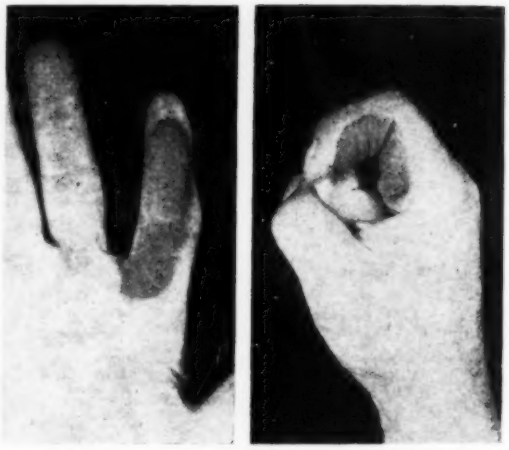

Fig. 9.

Result of abdominal flap to index finger applied immediately following an avulsion of volar skin and subcutaneous tissue. The pigmentation is objectionable, but the finger without such coverage would have been useless.

mediate use should be not more than two and a half to three times the width of the base. Planning of the flap to avoid kinking of the base by virtue of awkward positioning of the recipient extremity is equally important. Adequate thickness should be maintained with the expectation that future de-fatting may be necessary. A generous allowance for size is important, inasmuch as an excess can be trimmed much more easily than can an unexpected shortage be overcome. Most large flaps when used without previous elevation (as in the case in avulsing wounds) should be double ended or gauntlet type. Combining the use of a flap and split graft which can later be resected and replaced by the bridging portion of the flap may occasionally be desirable. Pressure dressings to the flap are important in maintaining good contact and preventing hematoma formation. It is admitted that application of the dressing in accordance with this principle is at times a bit tricky. Most trunk to hand flaps can be immobilized adequately by adhesive strapping, and the shoulder thereby kept at least partly mobilized. This is extremely desirable and may save considerable subsequent pain and fixation of the shoulder such as results if a shoulder spica cast is employed as part of the procedure. In cross legged flaps, however, casts are almost mandatory. Cutting the flap free from its pedicle can be started as soon as healing to the recipient site has progressed sufficiently to provide circulation. Small flaps have been freed in 12 to 15 days, whereas larger ones especially on the lower extremity may require more time. Cutting by stages allows some opportunity for observing the reaction without as much risk, and would seem desirable in flaps of the broad base type used in our cases.

Summary

A PLEA is made for the use of various skin shifting and grafting techniques in the primary closure of skin defects. This is particularly important where future function may be jeopardized by needless sloughing of uncovered tendons, and where delayed healing prevents mobilization of the fingers.

Certain contra-indications are recognized, but in civilian and industrial practice today these cases should be few in number. Techniques of free skin grafting and the use of primary local and distant flaps have been described.

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Maintenance of Health in the Elderly Work Force

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OPTIMUM health can be defined as a state of economic, social, moral spiritual, mental and physical well-being. Many factors enter into the maintenance of health. As an industrial physician, I am fully aware of the importance of all the factors enumerated in the definition of health. The economy, the social structure, the moral and spiritual atmosphere—all play tremendous roles.

While the physician is generally regarded as the custodian of health because of his superior knowledge and understanding in the field of the mental and physical factors, it is obvious that he is just a member of a team in the over-all guiding of a program for the maintenance of health. Whether his knowledge and understanding in the maintenance of health in a maturing work force have been *properly utilized*, is, to my mind, highly debatable.

Changing Health Conditions in the Elderly

WHAT are some of the conditions created by a maturing work force? What happens as the work force grows older? I am using age 40 as an arbitrary line of division between the younger and the elderly workers.

On the credit side, we can say that the worker's skill and judgment increase, particularly through the fifth, sixth and seventh decades, if he remains in a good state of health. This makes the elderly worker a most valuable member of the work force. He has a better absentee record, fewer accidents, less spoilage of materials and finished products, and generally exhibits more loyalty to his employer.

On the debit side, we know that the maintenance of health becomes increasingly difficult during those decades. Certain changes take place which we might call physiologic aging. Physical motion is slowed up; reaction time is delayed. There is an increasing inability to withstand fatigue. There is a drying-up process going on in the cells of the body, quite marked in the organs of vision and hearing. There is an increased tendency to mental and emotional imbalance, probably hormonal in origin. This is evidenced by menopausal symptoms in the female, and there is good reason to believe that there is a similar change in the male. Diabetes mellitus, failure of the pancreatic gland to supply the hormone insulin, increases markedly after 40. We see the reverse condition known as hypoglycemia, due to too much insulin occurring more frequently in the individual past 40. We are beginning to believe that coronary disease which killed over 200,000 people last year, probably is hormonal in origin. Certainly the dramatic results obtained with ACTH, Cortisone, and Hydro-Cortisone lead us to believe that arthritis, bursitis, gout, and many other conditions common to the elderly are due to hormonal deficiency. Even the resistance to such a disease as tuberculosis seems to be lowered, for we see a greater incidence of tuberculosis in the years past 40. And the frequency of tumor growths, both benign and malignant, is definitely increased.

The healing processes of the body are markedly slowed up as we grow older. While it is true that the elderly group does not have as high a *frequency* of injury due to accident, nevertheless the *severity* of an injury in the group past 40, measured in insurance dollars, runs from about double to nine times the cost for injury occurring in the group from 18 to 40. The insurance dollar cost is usually multiplied by a factor of four to get over-all cost to management.

Thus, in the post-40 group, we see physiologic and pathologic aging due to heredity, to "natural" concomitants of age, or as the result of damage due to disease or neoplasms or deficiencies of hormones, vitamins or tissue enzymes.

The Effect of the Problem on Industry

WHAT is the effect of these problems on industry? Business and industry cannot operate without manpower. The group of elderly workers, both percentagewise and in point of over-all numbers of the total work force, shows a steady increase. Technological improvements, paradoxically, do not reduce the over-all need for manpower, but do put an additional stress upon man's *adaptive* mechanisms. We live in an era of speed and rapid changes. Not enough attention is paid by the engineer to the human capacities required by the rapidly accelerated rate of technological advances.

Management today is confronted with the problem of utilizing manpower effectively. This is its biggest problem. Consciously or subconsciously, management has had to face up to this problem, because it has learned in the final analysis that the optimum results to be obtained from the production, the distribution, the sales and service departments, depend upon the effectiveness of the human individuals who staff them. Many technical short cuts are invoked, but we always come back to the effectiveness of the individual, who is to operate the machine, sell the

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product, or render the services necessary. If industry continues a "laissez-faire" attitude toward health maintenance of the elderly group, it can expect reduced effectiveness.

How Industrial Medicine Helps

WHAT can industry do towards the solution of this problem?

No one will deny that the healthy worker is far more apt to be effective than the one who is unhealthy. Therefore, a large part of the solution lies in the maintenance of health, particularly those phases which are in the realm of industrial medicine. While it is true that most managements furnish medical care for occupational injury or illness, too often its concept of industrial medicine is limited to what may be described as "finger wrapping." Industry must be made to realize that medical care includes not only therapeutics for specific conditions but, more importantly, health guidance for the maintenance of effectiveness of the individual.

What do we mean by preventive industrial medicine? It begins with medical evaluations of the attitudes of the company, of the plant, the operation, the work station environment, and the materials handled. It evaluates management-labor policies and relationships. It provides for a program of continuing physical examinations, with constant matching of the human capacities against the job demands. It places medical services as close to the work station as possible. It provides for early diagnosis (case finding). It utilizes a record system which itemizes *all* of the medical complaints and is analyzed periodically, thus pinpointing the work station, the operation, or the individuals needing further investigation in order that situations causing trouble may be corrected. It considers the problem of job adjustments, *particularly as they relate to medically recommended changes or restrictions.* Last, but not least, it provides for medical counseling, based on medical histories and findings, thereby stabilizing the employee. I cannot emphasize too strongly this need for health counseling and guidance by professional medical people.

The primary goals for properly practiced industrial medicine are the reduction of and/or prevention of losses and the maintenance of effectiveness of the work force. These goals are particularly important if management wishes to cope successfully with the problem of the elderly worker. Management must plan for the maintenance of health of the elderly worker, and a full use of the potentials of industrial medicine must be a large part of that planning.

Industrial Nurses in New York State and the Nation

IN A PREVIOUS item in this series, extrapolation of the data in a New York State Department of Labor report* was utilized to acquire a rough estimate of the total number of salaried physicians serving industry in this country.

The same opportunity, governed by the same limitations, exists for calculating the number of industrial nurses. Presently it is common practice to mention "the 16,000 nurses in industry." It is not known that that figure ever has been authenticated, but a crude testing of it may be accomplished by the extrapolation now cautiously proposed.

In New York State 1531 full-time or part-time salaried nurses served (1950) in 765 work places with 100 or more employees and with definite exclusions as specified in the preceding item. This number of plants represents 81% of the 947 plants reporting the employment of some salaried medical personnel, and 17% of the state's entire lot of 4,468 used in this study. Thus there were .342 full-time or part-time nurses for every work place.

Tables available in the basic report supply many additional informations attending the services of these nurses together with practical nurses, such as the size of plants in which they are employed, associated full-time or part-time physicians, nurses representing the only full-time medical personnel, etc.

Throughout the land the total number of work places of the sizes at and above the 100 employee level determined approximately for the same time period is, from one set of figures 45,500, and from another, 43,954. Applying the New York ratio to the first figure yields 15,606, and to the second, 15,076. Through the medium of extrapolation of the New York records, the figures introduced become a rough approximation of the total number of registered, salaried, full-time and part-time nurses throughout the country.

Mindful that the computations here recorded exclude various locations of employment such as in governmental agencies, teaching connections, etc., readily it becomes assumable that the larger approximation of 15,606 will exceed 16,000—the traditional figure.

SUMMARY: In the United States the total number of full-time and part-time registered, salaried, industrial nurses functioning directly in industry, and not including those in governmental or educational institutions, by approximation, is near 15,606. Without the exclusion mentioned the number probably exceeds 16,000.

*MEDICAL PERSONNEL AND EMPLOYEE FEEDING FACILITIES IN NEW YORK STATE ESTABLISHMENTS EMPLOYING 100 OR MORE WORKERS. Department of Labor. DR. LEONARD GREENBURG, Director of the Division of Industrial Hygiene and Safety Standards, and CHARLES A. PEARCE, Director of the Division of Research and Statistics. Publication B-55, March, 1952.

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Management of Bursitis of the Shoulder in Industry

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WE HAVE found trauma, occurring in industrial workers, a common cause for the clinical onset of previously quiescent peritendinitis and bursitis of the shoulder. Painful shoulder, a common finding in an industrial clinic, may not always be recognized as bursitis unless the history and symptoms are carefully evaluated. Roentgen examination and treatment have proved to be valuable in the ambulatory management of these lesions.

The traumatic causation of these painful shoulders has been of three types:

1. Direct blow to the shoulder—usually the right.
2. Repeated unusual muscular actions, such as painting, scraping, digging.
3. Sudden strain during lifting.

These patients usually present symptoms of intense pain originating in the deltoid area and radiating down the arm and to the neck and scapular region. Radiation to the fingers occasionally occurs. Touching the hand to the back of the head or raising the involved arm is performed with great difficulty and causes severe pain. This pain intensifies at night, and in the supine position, and is aggravated by local heat. The patient usually holds the affected arm for relief.

Fluoroscopic and roentgen examination of the shoulder should be made; fluorographic motion studies may be valuable. In this acute syndrome, soft tissue calcification adjacent to the greater tuberosity of the humerus is frequently demonstrated. This may vary from several millimeters to two centimeters in maximum diameter. Similar calcification may be visualized adjacent to the coracoid process of the scapula or adjacent to the inferior aspect of the glenoid fossa. In some cases, no calcification is demonstrable. Motion studies will demonstrate varying degrees of limitation.

These cases of peritendinitis and bursitis should be differentiated from those who have a ruptured supraspinatus tendon. They are to be distinguished from those with a protruded cervical intervertebral disc, or who are exhibiting the effects of degenerative arthritis of the cervical spine. Clinical phenomena and radiologic examination will differentiate them.

X-ray treatment accompanied by sling immobilization and sedation during the acute phase has, in our experience, produced prompt clinical improvement.

High dose roentgen therapy is the treatment of choice. 300 r to 400 r are administered through a 9-cm. anterior shoulder portal at the first treatment. The factors used are 160 KV to 200 KV, with 0.5 mm. copper and 1 mm. aluminum filtration at a distance of 50 cm. A similar treatment is given in 24 hours through a posterior portal. Intensification of the pain may occur during the first 24 hours; this is due to local hyperemia. If the improvement does not occur after the first treatment, it usually takes place after the second. If pain still persists, treatment is continued at 48-hour intervals; 250 to 300 r then are given to one shoulder portal at each treatment. Therapy is concluded in two to seven days.

Patients should be informed of the possibility of increased pain after the first treatment.

The arm should be immobilized in a sling during the acutely painful phase. As soon as possible limited passive and active motion should be started. Motion is permitted through any range that is not painful. In that fashion, a gradually increasing range of motion occurs. This regime of gradual mobilization insures a more prompt return to normal function.

During the period of pain codeine sulfate, gr. ½, is given every three hours. Sedation, 1½ to 3 grains of seconal, is usually necessary before retiring the first two nights.

Pain is usually much reduced in one to three days. Return to full work occurs in two to four days. All of the patients treated responded to this regimen. Complete functional recovery occurred. The sooner the treatment is started, the more satisfactory the response.

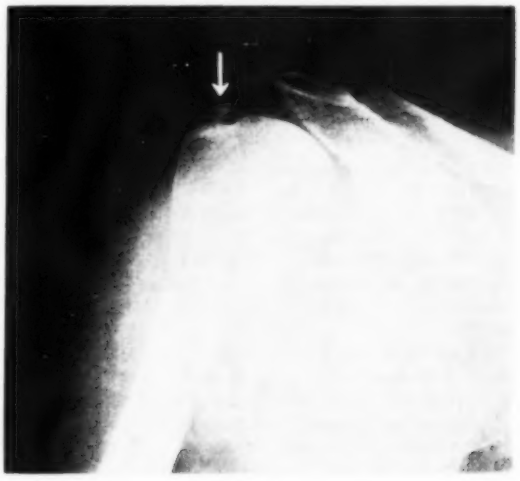

Fig. 1.
An irregular fragmented calcification in the tendon of the right supraspinatus.

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Case Reports

THE following are representative cases that were treated.

1. A. B., stenographer. This 61 year old female twisted her right shoulder on November 26, 1949, when she fell on cellar steps. On the following day she was unable to raise arm because of pain. X-ray examination, December 2 (Fig. 1), revealed an irregular fragmented calcification in the tendon of the right supraspinatus. This calcification measured 4 x 5 mm. in size. It represented a peritendinitis associated with bursitis. Roentgen irradiation was begun on December 2. Improvement was evident the next day, and pain was almost completely gone three days later.

2. J. B., mechanic. This 54 year old male twisted his right shoulder when a ladder slipped while he was fixing a ceiling light. The next day, November 7, he was unable to raise his arm because of pain. X-ray examination revealed a 1-mm. focus of calcification in the tendon of the right infraspinatus. Roentgen irradiation was begun at once; improvement was present on November 8, and the pain was gone on November 11.

3. A. C., cutter. This 46 year old male lifted a heavy box while at work on December 30, 1950. He felt pain in the right shoulder immediately but continued to work. The next day he was unable to raise his arm because of pain. X-ray examination on January 5, 1951, revealed calcification in the right supraspinatus tendon. Irradiation was begun on the same day, and three days later the pain was almost completely gone.

4. D. C., stenographer. This 45 year old female fell off a chair on April 3, 1951, and struck her right shoulder. On April 4, she was unable to raise arm because of pain. X-ray examination on that date revealed evidence of supraspinatus peritendinitis. Roentgen irradiatino was begun on April 4, and marked improvement was evident on April 6.

5. W. D., shipping room worker. This 57 year old male twisted his right shoulder while pushing a rack of clothes on November 16, 1949. He was unable to raise his arm the same day because of pain. X-ray examination revealed a sharply marginated calcification 1 cm. by 7 mm. in size in the tendon of the right supraspinatus. X-ray treatment was begun on November 16. Improvement occurred in 48 hours, and by November 21 pain was gone.

6. H. H., engraver. This 51 year old male lifted a heavy trunk on May 28, 1951. He developed pain in the left shoulder on May 29. He could not raise his arm because of pain. He reported for treatment on June 6, when roentgen examination revealed a distortion of the soft tissues in the region of the subdeltoid bursa as well as calcification in the infraspinatus tendon. X-ray treatment was begun at once, and improvement was evident on June 9. By June 11, pain was almost completely gone.

7. F. P., presser. This 60 year old male had pain in the right shoulder for two months following a fall at home. He did not report difficulty until he could not raise his arm because of pain. X-ray examination on April 28, 1951, revealed no evidence of calcification in the rotator cuff of the shoulder, but did demonstrate degenerative phenomena in the cervical spine. It was felt a peritendinitis of the rotator cuff of the right shoulder was present, and roentgen irradiation was begun the same day. It has been our experience that response to roentgen therapy is not as prompt when advanced degenerative changes are present in the cervical spine. Better response occurs when the cervical spine and cervical nerve roots are irradiated as well. Both shoulder and cervical spine areas were therefore treated. Pain regressed gradually over a period of two weeks.

8. S. P., operator. This 45 year old female developed severe pain in the right shoulder the day after washing woodwork at home. X-ray examination, two days later, demonstrated fragmented calcification in the tendon of the supraspinatus. Its maximum diameters were 3 mm. by 7 mm. X-ray treatments, begun on September 24, resulted in rapid improvement, and by September 27 the pain was gone.

9. F. G., glass fitter. This 43 year old male had an onset of pain in the left shoulder on May 13, 1949, following the lifting of heavy plate glass. On May 14 there was marked limitation of motion in the shoulder due to pain. X-ray examination revealed supraspinatus peritendinitis with calcification and bursitis. X-ray treatment begun on May 14 resulted in reduction in pain in 48 hours and complete relief in 96 hours.

Conclusion

PERITENDINITIS of the rotator cuff of the shoulder accompanied by bursitis frequently becomes clinically significant in industry following an episode of trauma. Roentgen irradiation, temporary sling immobilization of the arm and sedation have been found to be an effective ambulatory treatment regimen, resulting in rapid improvement and return to unrestricted work.

All patients in this particular series responded favorably. If clinical improvement should not occur then these cases may require physical therapy, nerve block, immobilization with traction or surgical removal of the calcified bursa.

(P.S.F., 1422 Chestnut St.)
(B.B., 5910 Greene St.)

Industrial Psychiatry

— Five-Year Plant Experience —

GERALD GORDON, M.D.
Psychiatrist, E. I. du Pont de Nemours & Company
Wilmington, Delaware

AN EXPERIMENTAL investigation was carried out in a large chemical plant to learn whether there was a psychiatric problem in the industry of sufficient magnitude to interfere with production, and what could be done about it.

F. W. DERSHIMER, M.D., pioneered in the introduction of psychiatry to the du Pont Company, beginning in 1943. Twenty-five years of research had led him to the formulation of new concepts of mental health, and of the cause, transmission, and psychopathology of mental illness. From these he evolved shortened, simplified measures for treatment and prevention. These seemed to have useful applications in industry.[1-2]

THE work reported here has been—and still is—an independent attempt to check on the validity of his theories, and to demonstrate whether his results could be duplicated by another psychiatrist.

Seven percent of the plant personnel were seen in psychiatric consultation between January, 1947, and December, 1950, as a result of referrals by the plant physicians, supervision, or the employees themselves. These individuals all had emotional difficulties, sufficient to interfere with their well-being and productivity. This group by no means contains all the mentally sick employees in the plant. Our continuing experience and that of other observers suggest that there are probably three or four times as many more patients as have been seen.

Statistical analysis of the patient group reveals that this is a fair sample of the plant population as to age, service, health, responsibility, and social and economic status.

Certain features did distinguish this patient group from the average employee group. They contributed predominately to the problem of absenteeism; they had, as a group, a significantly greater percentage of the major and sub-major accidents than the rest of the plant. They furnished an excessive proportion of the industrial and personnel relations problems. They had contributed grossly to the dispensary attendance, and had taken a disproportionate amount of time on the part of the physicians, nurses, supervisors, and shop stewards.

Review of medical records and other data which could be gathered indicated that these emotionally sick individuals, early in the course of their employment, had set a pattern of poor productivity which had persisted grimly throughout the years without regard to type of job, personality of the boss, location of work, or any other extraneous circumstances, so long as no corrective steps were taken.

The records disclosed that many well-intended efforts had been made to help these people. Disability wages had been paid for sickness after sickness, medical attention had been lavish, and 40 to 50 days lost on disability wages per year for 13 years were not rare. Dispensary visits for medical and surgical conditions would frequently run 30 to 40 per year.

The collected data necessary properly to evaluate these cases, provided some indication that proper compilation of such data into one record could give an objective means of recording and evaluating the performance of an employee early in the course of his employment. Where this would suggest a potential failure, corrective measures could be instituted early so that rehabilitation might be more successful.

The data indicated, too, that the mentally sick, the failing, employee is not a different kind of human being. He cannot be described by size, shape, or personality. The common characteristic is his failure to meet his basic responsibility for living and working productively.

Contrary to common belief, he is not being made sick by bad heredity, by material insecurity, by greater responsibility, by world tension, or any of the many excuses for nervousness. Complaints about bosses or working conditions usually proved groundless when investigated. The real cause of the difficulty in the nervous patient is that he is not being required to behave properly, and probably never was required to do so through childhood and adolescence.

The symptoms presented by the usual patient were those well known in the common anxiety state, plus a story of considerable social, domestic, and working friction.

Lack of job security did not contribute to the emotional illness. On the contrary, many of the long service employees, who had as near complete job security as possible, were most anxious and insecure in their jobs. Not one single person blamed his difficulties on material insecurity even where this existed in fact. The very real material insecurity was not infrequently the result rather than the cause of the mental illness. In spite of an adequate income, evasion of reality had resulted in economic straits. The patient would usually have something on which to blame his sickness. This self diagnosis, like other forms

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of self diagnosis, as has been recognized by the medical profession for centuries, is misleading and dangerous.

Injuries or toxic exposures, which involved the emotionally sick employee, were particularly serious problems. In cases where the trauma had healed completely or there were no residual effects from the toxic exposure, a policy of continued treatment, reassurance and appeasement led only to prolongation of the patient's complaints. Removing an employee from an area where he had received such exposure upon the basis of the patient's own diagnosis of the disability, resulted only in fixing the patient's symptoms. Individuals have reported that since they were removed from a hazardous area, no one would ever convince them that they had not been harmed by the substance to which they had been exposed. They reasoned that management would not have moved them unless management, also, believed that the injury or toxic hazard caused their continued symptoms.

A definite superstitious fear of the emotionally sick employee was found among supervision and some medical men, most of society having been completely overawed by him. This has, in the past, led to a policy of appeasement and efforts to remove the individual from the stresses and strains of life, yet it was common observation that the subsequent history of many of these individuals showed repeated difficulties. Many nervous patients recovered spontaneously by the time the 13 weeks' disability wage period had expired. One clear-cut paranoid schizophrenic was found who had been hospitalized for his disabling mental illness on three different occasions during a period of 10 years. In each instance, apparently quite cured, he returned to work within a few days of the expiration of his pay for disability.

EFFORTS to cure the patient by changes in the environmental conditions only prolonged the disability and set the stage for recurrent illness. The daily dispensary records on these patients, going back over many years, revealed the utter futility of symptomatic treatment. The backache would give way to diathermy, but was immediately followed by gastric ulcer symptoms. This yielded to antispasmodics, but was replaced by headaches. When aspirin solved this problem, nervousness ensued. Phenobarbital calmed the patient down for a while. Soon, job failure made supervision pass him off to another area with a glowing recommendation, but his happiness with the new job was ruined by the distress shift work caused him. That was easily handled by another transfer, but the lifting of heavy barrels in the new area quickly resulted in backache which again required hours of time in the dispensary for diathermy. The records of many individuals showed symptoms referable to every major system in the body.

Occupational therapy has long been known as a useful adjunct to other forms of treatment in the mental hospitals. Industrial physicians and nurses, as well as management and supervision, are in a position to experiment with the effect of real occupational therapy in the case of the problem employee.

After a case was studied and the diagnosis of emotional sickness was made, standard corrective practice required the employee to return to full regular duty at the same job. This was routine except where serious organic contraindications were present, such as a bleeding gastric ulcer or the rare case of a dangerous psychotic. The experience in this plant showed this to be a safe procedure, since most of the cases had been thoroughly studied for their various illnesses by outside specialists and the plant doctors, and many had been hospitalized for diagnostic studies. Where indicated, supervision was contacted and recommendations made that all excuses for poor performance be henceforth disregarded. It was emphasized that under no circumstances should the supervisor allow himself to become involved in an argument as to whether the patient was ill. This was held to be strictly the responsibility of the plant physician. The supervisor was to concern himself solely with the man's behavior on the job. His work performance was to be required the same as that of all other workmen in the group. Failure to require this usually prolongs the illness. There were, of course, exceptions to this. We have no data to indicate that any injustice, either medically or morally, was ever done to any employee through this course of action. These same recommendations were made in the same way to management for the treatment of salaried personnel.

One employee, exposed to toxic fumes early in the year, who has no residual defects, is still in and out of work with various psychosomatic complaints. The above recommendations had been made to his supervision, but the man reports that they are being very kind to him, permitting him to take it easy. He will probably continue to be sick and non-productive until he is required to be otherwise.

WHERE supervision failed to follow the medical recommendations and insisted upon coddling and appeasing the employee, failures usually resulted. One patient, who had been put to work with a backache of nervous origin, came in complaining bitterly because his foreman was always asking him how he felt. He went on to say, "I feel lousy, and I don't want to talk about it. I wish you would get that foreman off my neck." Supervisors were not the only offenders; they complained about the physicians following a policy of appeasement and coddling. This type of comment was heard: "I give a man a reprimand for poor work, and he goes crying to the hospital with a bellyache. Somebody sends him home. How can I straighten him out without some cooperation from the hospital?"

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The complaints of both the physicians and the supervision were well founded in many cases. The solution to this dilemma already exists in the strict division of areas of responsibility. When the supervisor maintains his authority in the field of production and the physician maintains his authority in the field of health, and neither tries to usurp that of the other, this problem ceases and the employee benefits.

Misunderstandings frequently arose because both groups did not have the same records available and were consequently getting different pictures of the problem. Further work is being carried out in cooperation with one of the plant personnel men in an effort to evolve a form of record which will contain the necessary data for an objective evaluation of the employee's over-all performance. The need for such records became even more apparent when the evaluation of the results of the psychiatric experiment was attempted. Supervisors frequently commented that the idea of expecting people to work and earn their daily bread was nothing new, but that this realistic approach could also help individuals recover from illness was new.

The physician, too, found it difficult to overlook the symptoms of the suffering individual, since his training had been to minister to the comfort of his patients. Our data indicate that requiring a patient to meet his responsibilities, regardless of the symptoms of his psychosomatic ills, creates no hazard to his physical health compared to the very real danger to his mental health where his symptoms permit him to evade his obligations. It must be emphasized that there are few, if any, malingerers. It is impossible to "imagine" symptoms, nor are a patient's symptoms ever "in his head." The weak, sick, complaining employee usually feels just as badly as he reports. Whereas the patient with pneumonia is helped by nursing, the patient with an emotional illness is driven into further sickness, suffering, and disability by this same nursing. Using this form of therapy, the physician cannot hope to be liked by the patient. It was found, however, that this same disgruntled, angry employee would sometimes report back two years later stating that he was grateful for the treatment he had received. He recognized that, for many years, he had needed someone who would treat him in this realistic, mature fashion and stop his persistent evasion of reality.

THE author's military experience bears out these observations. A training camp had been set up in the combat theater. Patients who had resisted all possible forms of therapy and who were found to be medically well were sent to this camp for a course in basic training. No excuses were accepted for not soldiering. The commanding officer of this camp reported that many men, after completing their training and returning to active units again, came back to visit on their leave and expressed gratitude to him for finally being made to perform like men. As long as the door of the psychiatrist's office was held open for soldiers to escape from their duty, quite reasonably they took advantage of it, and many remain, to this day, sick wards of the state. When the door was closed, they became honorable soldiers again, and are now self-respecting independent citizens. It is understood that the observations of World War II are being applied successfully in Korea at this time.

Many conferences were held with groups of supervisors in the effort to encourage them to carry out what appeared to be, at first, a course of action which would make the patient worse. In those areas where supervision persisted in following these recommendations, however, absenteeism was reduced, fewer accidents were encountered, and personal problems were minimized, with an apparent improvement in morale.

Early in the course of this program, objections were raised by the union, which was critical of the course of action. The union officers did their job by making their objections known, but were extremely open-minded to reasons and data. The results were watched carefully and, so far as is known, no official complaint was ever made to management about the psychiatric program. There has been no union committee in the psychiatrist's office for over a year. Occasionally, a shop steward will drop in to get psychiatric help in the handling of some person with a grievance. A member of management, who cooperated most closely with the author in this program of occupational therapy, was recently promoted and transferred to another plant. At his farewell dinner, a present and letter of appreciation were given to him by the union in recognition of his straightforward policies in dealings with them.

THE weakest part of any psychiatric research is the evaluation of results. This paper is subject to the same criticism. In order to minimize this defect, cases were considered improved only in those instances where definite objective evidence of better performance was available. Such factors as improved attendance, better safety performance, and cooperativeness were used as criteria where possible. Objective factors always superseded the psychiatrist's opinion and records. The hazards of even this type of evaluation are illustrated by this incident. One of the patients was reported by his supervision, voluntarily, about six months ago, as being "a star pupil" who had become a fine productive workman and was no longer a problem to the boss since he had been seen by the psychiatrist. A similar glowing report was made later. Very recently, the same employee was seen in another physician's office with a note from the same supervisor asking what was wrong with the man, since every time he was asked to do a job he complained he could not do it "because of spasms or something."

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TWO-THIRDS of the entire patient group for the period studied are still actively employed in the plant. Personal interviews with the present supervision and management revealed that about half of the patients were considered to have improved. Some of this group had accepted psychotherapy, some had not. Where the patient had accepted therapy, a distinctly higher rate of improvement was found.

Unknown to the author at the time, an experiment was performed in the group which had the worst safety record probably in the entire company. The superintendent of this group was severely criticized for this poor safety performance, it having been made clear to him that such performance would no longer be tolerated. He, in turn, demanded the same performance from the supervisors and they, in turn, from the workmen. The result was a world's record of safety performance in this group with the identical personnel and working conditions.

This study has opened up many avenues for future exploration. The failures show that by no means do we have in psychiatry a panacea for all the ills of industry. The work does, through its minor successes, indicate a direction which, at the moment, and in the opinion of the author, seems to offer hope for improving a situation which is far from satisfactory. On the basis of such criteria as we now feel indicate the quality of morale, the data seem to show that the picture in this plant has improved.

SUMMARY: (1) A psychiatric problem exists in industry which involves at least a quarter of the working force.

2. The emotionally sick employee causes an excessive number of injuries, absenteeism, and industrial and personnel relations problems. This performance will usually continue until some action is taken to see that it stops.

3. The emotionally ill employee superficially does not differ from the average normal employee except in the degree of his individual productivity.

4. Management and supervision can successfully rehabilitate many emotionally sick employees by requiring normal performance. The sickest individuals seen are those who have had the most done for them.

5. It is possible early to identify the potential problem employee by properly centralizing and correlating pertinent data.

6. In the author's opinion, the psychiatrist's chief function is to make a diagnosis of the emotionally sick employee and give medical support to management for what is at present an unpopular course of action.

[ACKNOWLEDGMENT: This project could not have been carried out without the support and cooperation of Management. E. E. Evans, M.D., the Medical Director, and the other plant physicians worked closely and cooperated most helpfully with this work. Mr. Ivan Viele, a plant personnel man, has done much to assist the author in accumulating and studying those items of personnel data which contribute to the evaluation of employee productivity. Mr. Wallace MacKinnon, of the Organic Chemicals Department, assisted in the setting up of the form for the collection of data, and did the mathematical calculations for the statistical analysis. Dr. F. W. Dershimer was in consultation with the author throughout the entire work and contributed immeasurably to its fulfillment.]

References

1. DERSHIMER, F. W.: A Study in the Cause and Prevention of Functional Mental Disease. *Am. J. Orthopsychiatry*, 8:2, 302 (April) 1938.

2. DERSHIMER, F. W.: The Influence of Mental Attitudes in Childbearing. *Am. J. Obst. & Gynec.*, 31:3, 444 (March) 1936.

The Problem of the Upkeep

INDUSTRY today faces the problem of the upkeep—not merely of machines, but, more importantly, of men themselves. And it is much easier to replace a broken machine than it is to replace a broken man. To protect its men, industry can choose one of two possible courses. It can provide for the treatment of symptoms—and continue to pay homage to disease. Or, by searching for the causes, it can undertake to remove the problem entirely. Whatever your business, whatever your product or service, your health and the health of your employees is the most valuable asset you have. If industry and individuals will help provide the facilities, the University will provide the men who know how to use them in the conquest of disease.

—The Council on Medical and Biological Research of the University of Chicago, FAIRFAX M. CONE, Chairman.

Westward Ho

1953 INDUSTRIAL HEALTH CONFERENCE

Hotel Statler—Los Angeles—April 18-25

Transportation Arrangements

A MESSAGE FROM THE CONFERENCE GENERAL CHAIRMAN

The following special transportation arrangements offer an excellent opportunity to attend our first West Coast Convention at reasonable rates and under the best possible travel conditions.

Your Transportation Committee has also listed several interesting Post Convention Tours for members and their families wishing to combine Convention business with a pleasure trip following the meetings. On the Reservation Form please indicate the tour for which you desire reservations.

I urge every member from the East and Middle West planning to attend the Convention to travel via our Special Train. It offers an ideal chance to renew old acquaintances and make new friends, in addition to the fun of traveling with one's own group.

Early reservations are essential, make yours now! Note that when applying for reservations, a deposit of $25.00 per person must accompany the application.

GEORGE F. WILKINS, M.D.
Conference General Chairman

Reservation Application

(After completing, tear out and mail)

Mr. George F. Hathaway
185 Franklin St., Room 610
Boston 7, Massachusetts.

Make checks payable to:
"George F. Hathaway—I.H.C. Tours"

Please make the following transportation reservations to the Industrial Health Conference for:

NAME *STREET ADDRESS* *CITY* *STATE*

_____

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IMPORTANT:

Be sure to fill in your reservation requirements on reverse side of this application.

(over)

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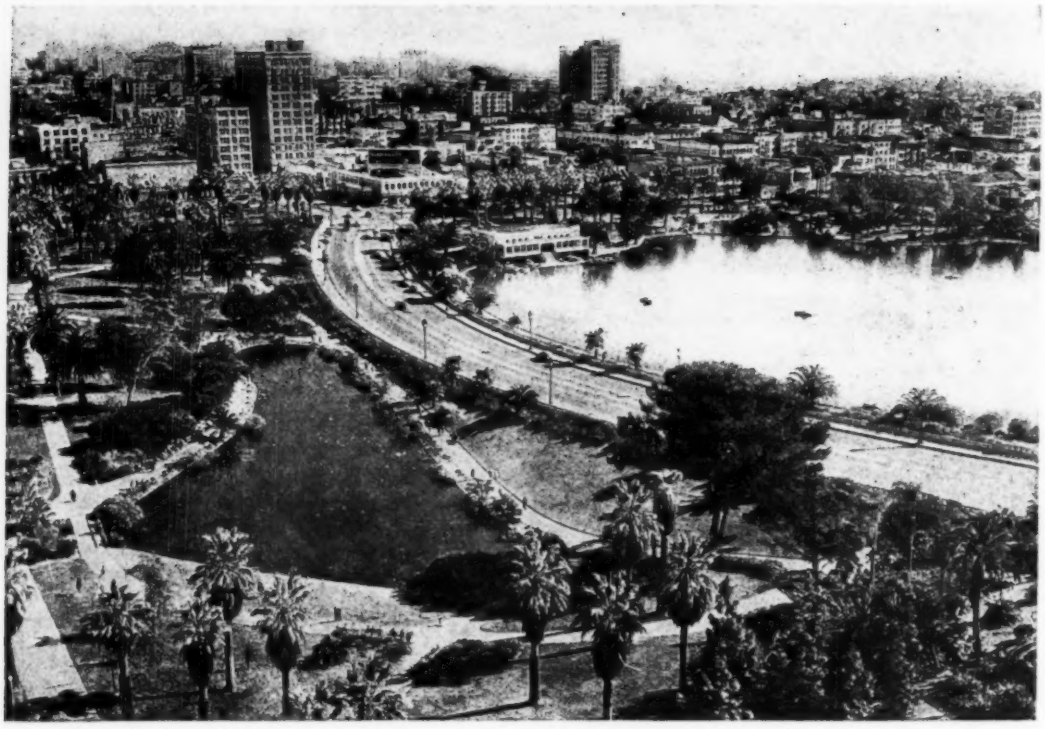

World famous Wilshire Boulevard. Crossing MacArthur Park with downtown Los Angeles in the background.

SECTION A. *RAIL RESERVATION REQUIREMENTS*

1. Please reserve on connecting train to Chicago, _____ in the special car of: (circle one) (Type of pullman space)
   A. New England Section B. New York Section C. Penn.-Wash. Section
   Boarding Train at _____ on April 17, 1953.
2. Please reserve _____ on the *IHC SPECIAL TRAIN from Chicago*
   (Type of Pullman Space)
   boarding train at Chicago or Kansas City, April 18, 1953. (Circle Boarding Station)
3. Please reserve same type accommodations to return on IHC Special Train (unless taking Post Convention Tour) also continuing reservations from Chicago to hometown. (Yes — No)

SECTION B. *AIR RESERVATION REQUIREMENTS*

1. Please reserve _____ seats by plane from _____ on April 19 to Los
   (Insert Boarding Station)
   Angeles and return April 25, 1953. Reserve the seats(s) on *Air Tourist Flight* (Check
   First Class Service one)

SECTION C. *POST CONVENTION TOUR RESERVATIONS*

1. Please make following reservations for Post Convention Tour.

Tour A. One Day Grand Canyon Tour.	Yes_____	No_____
Tour B. Mission Trail and San Francisco.	Yes_____	No_____
Tour C. Mission Trail, Yosemite Park and San Francisco.	Yes_____	No_____
Tour D. Hawaii Air Tour.	Yes_____	No_____

Return reservations will be provided at completion of tour direct to hometown in same type accommodations, if available, as held by passengers on westbound trip.

NOTE: If you prefer optional return route or date of return other than shown above please attach letter giving details.

Enclosed is check for $_____ covering deposit of *$25 per person* for accommodations requested. I agree to send balance before March 15, 1953. I also understand that full refund of deposit will be made if any cancellation is made before March 1, 1953, otherwise deposit will be subject to any deduction because of refund charges made by the carriers.

(SIGNED) _____ (ADDRESS) _____

TEL. NO. _____ (CITY — STATE) _____

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IHC—AIR TOUR SPECIAL

Westbound

			TWA No. 21 Air Tourist	AA No. 15 First Class	
April 19	Lv.	New York, LaGuardia Airport	1:00 PM	9:00 AM	EST
Sunday	Arv.	Chicago, Airport	*3:20 PM	11:20 PM	CST
		Members from Detroit-Cleveland-Buffalo-Pittsburgh-Columbus-way points join at Chicago.			
	Lv.	Chicago, Airport	4:05 PM	11:50 PM	CST
	Arv.	Los Angeles, Airport	9:30 PM	5:15 PM	PST

Eastbound

			AA No. 614 Air Tourist	TWA No. 94 First Class	
April 25	Lv.	Los Angeles, Airport	10:05 AM	8:05 AM	PST
Saturday	Arv.	Chicago, Airport	6:30 PM	4:30 PM	CST
		Members for intermediate stations east of Chicago leave plane at Chicago.			
	Lv.	Chicago, Airport	7:00 PM	5:00 PM	CST
	Arv.	New York, LaGuardia	10:50 PM	8:50 PM**	EST

*Meal stop for Air Tourist passengers. **Arrive Idlewild Airport

ALL SCHEDULES SUBJECT TO CHANGE WITHOUT NOTICE

ROUND TRIP AIR TOUR FARES TO LOS ANGELES—PER PERSON—TAX INCLUDED

From	*Via*	*Air Tourist*	*First Class Service*	*Note:*
Boston	Connecting flight to N. Y.	$254.27	$366.16	Passengers holding regular fare tickets may return via diverse routes at no additional cost.
New York	Thru plane	227.70	357.12	
Chicago	Thru plane	174.80	250.72	

NOTES

N.B. 1 If any changes of rate occur adjustment for decrease or increase will be made on final bill. All rates subject to change without notice.

N.B. 2 Above rates do not include Post Convention Tour Rates.

IHC STREAMLINED SPECIAL TRAIN BETWEEN CHICAGO AND LOS ANGELES

WESTBOUND READ DOWN			*Santa Fe Railroad*		*EASTBOUND READ UP*		
April 18 Saturday	12:01 PM	Lv.	Chicago, Dearborn Station	CST	Arv. 3:45 PM		April 26 Sunday
	9:30 PM	Lv.	Kansas City, Union Station	CST	Arv. 6:30 AM		
			Passengers to and from Minnesota and Missouri change at Kansas City.				
April 19 Sunday			Enroute across New Mexico and Arizona. Equipment of the special train will consist of streamlined sleeping, diner and lounge cars.				April 25 Saturday
April 20 Monday	10:25 AM	Arv.	Los Angeles, Union Station	PST	Lv. 1:30 PM		April 24 Friday

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CONNECTIONS BETWEEN EASTERN AND MIDDLE WEST CITIES

SPACE WILL BE RESERVED IN SPECIAL CAR FOR IHC MEMBERS ON THE NEW ENGLAND STATES LIMITED WESTBOUND AND ON THE LAKE SHORE LIMITED RETURNING EASTBOUND

NEW ENGLAND SECTION

WESTBOUND READ DOWN			*New York Central System*		*EASTBOUND READ UP*		
April 17 Friday	2:30 PM	Lv.	Boston, South Station	EST	Arv. 3:30 PM		April 27 Monday
	3:34 PM	Lv.	Worcester	EST	Arv. 2:21 PM		
	4:41 PM	Lv.	Springfield	EST	Arv. 12:55 PM		
	5:55 PM	Lv.	Pittsfield	EST	Arv. 11:28 AM		
	12:07 AM	Lv.	Buffalo	EST	Arv. 9:00 AM		
			(Eastbound to Buffalo only, passengers Lv. Chicago 7:30 PM)				
April 18 Saturday	8:25 AM	Arv.	Chicago, LaSalle Station	CST	Lv. 6:30 PM		April 26 Sunday

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NEW YORK SECTION

SPACE WILL BE RESERVED IN SPECIAL CAR FOR IHC MEMBERS ON THE ADVANCE COMMODORE LIMITED WESTBOUND AND ON THE LAKE SHORE LIMITED RETURNING EASTBOUND

WESTBOUND READ DOWN			*New York Central System*	*EASTBOUND READ UP*			
April 17	3:00 PM	Lv.	New York Grand Central	EST	Arv.	1:00 PM	April 27
Friday	5:50 PM	Lv.	Albany	EST	Arv.	9:55 AM	Monday
	6:17 PM	Lv.	Schenectady	EST	Arv.	9:22 AM	
	8:40 PM	Lv.	Syracuse	EST	Arv.	7:09 AM	
	9:59 PM	Lv.	Rochester	EST	Arv.	5:41 AM	
April 18	7:30 AM	Arv.	Chicago, LaSalle Station	CST	Lv.	6:30 PM	April 26
Saturday							Sunday

PENNSYLVANIA-WASHINGTON SECTION

SPACE WILL BE RESERVED IN SPECIAL CAR FOR IHC MEMBERS ON THE SCHEDULE SHOWN FROM NEW YORK, WASHINGTON AND PITTSBURGH

WESTBOUND READ DOWN			*Pennsylvania Ry. System*	*EASTBOUND READ UP*			
April 17	5:00 PM	Lv.	New York, Penn. Station	EST	Arv.	11:59 AM	April 27
Friday	6:26 PM	Lv.	North Philadlephia	EST	Arv.	10:30 AM	Monday
April 17	5:30 PM	Lv.	Washington	EST	Arv.	12:10 PM	April 27
Friday	6:26 PM	Lv.	North Philadelphia	EST	Arv.	11:17 AM	Monday
April 17	11:43 PM	Lv.	Pittsburgh	EST	Arv.	8:48 AM	April 27
Friday	(Eastbound passengers to Pittsburgh only, leave Chicago at 8:20 AM. Arv. Chicago, Union Station 10:15 PM)						Monday
				CST	Lv.	6:30 PM	April 26
							Sunday

MINNESOTA AND MISSOURI CONNECTIONS AT KANSAS CITY

WESTBOUND READ DOWN			*Minnesota Service via Rock Island "Rockets"*		*EASTBOUND READ UP*			
April 18	12:01 PM	Lv.	Minneapolis	Union Station	CST	Arv.	6:30 PM	April 26
Saturday	12:25 PM	Lv.	St. Paul	Union Station	CST	Arv.	6:00 PM	Sunday
	9:15 PM	Arv.	Kansas City	Union Station	CST	Lv.	9:10 AM	
			Missouri Service via Missouri Pacific Ry.					
April 18	4:00 PM	Lv.	St. Louis	Union Station	CST	Arv.	12 Noon	April 26
Saturday	9:00 PM	Arv.	Kansas City	Union Station	CST	Lv.	7:01 AM	Sunday
	Missouri Pacific Ry.							

NOTE

NEW YORK CENTRAL SYSTEM AND PENNSYLVANIA RAILROADS OFFER FAST OVERNIGHT TRAINS BETWEEN DETROIT, CLEVELAND, TOLEDO, CINCINNATI, COLUMBUS, INDIANAPOLIS, TO CONNECT WITH SPECIAL TRAIN AT CHICAGO. CONSULT LOCAL TICKET AGENT FOR BEST CONNECTIONS. MEMBERS FROM ABOVE AREAS SHOULD ARRANGE OWN TRANSPORTATION TO CHICAGO. TICKETS AND SPACE BEYOND CHICAGO WILL BE PROVIDED BY THIS COMMITTEE.

ROUND TRIP FARES—COST PER PERSON—TAX INCLUDED

Rates From	*Boston*	*New York*	*Washington*	*Chicago*	*Kansas City*
DUPLEX RMTTE. (FOR ONE)	328.80	312.14	288.25	200.25	164.34
ROOMETTE (FOR ONE)	342.49	325.95	301.47	215.04	177.15
SINGLE BEDROOM	376.65	359.17	332.99	239.20	198.09
DOUBLE BEDROOM (FOR TWO)	322.07	305.99	282.73	200.49	158.47
COMPARTMENT (FOR TWO)	342.72	326.06	301.47	215.44	177.79
DRAWING ROOM (FOR TWO)	376.64	359.18	332.98	239.19	198.09
DRAWING ROOM (FOR THREE)	333.50	317.08	293.19	208.60	171.35
BEDROOM SUITE (FOR TWO)	376.64	359.18	332.98	239.19	198.09
BEDROOM SUITE (FOR THREE)	333.50	317.08	293.19	208.60	171.35
BEDROOM SUITE (FOR FOUR)	311.90	295.99	273.30	193.31	158.47

Rates, include tax, roundtrip railroad fare and roundtrip pullman space of type selected or assigned. If space requested is not available the Committee reserves the right to assign next best available type of accommodation.

NOTES

N.B. 1 Schedules and fares not shown from intermediate points served by the special cars to Chicago will be quoted on application.

N.B. 2 If any changes of rate occur adjustment for decrease or increase will be made on final bill. All rates subject to change without notice.

N.B. 3 Above rates do not include Post Convention Tour Rates.

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POST CONVENTION TOURS

TOUR "A"—GRAND CANYON—ONE DAY ALL EXPENSE STOPOVER

(This Tour Only Available To Passengers Holding Rail Tickets Via Santa Fe to Chicago)

Leave Los Angeles any afternoon via Santa Fe Railways Grand Canyon Limited for overnight trip to Canyon. Space in the Canyon layover sleeper.

Arrive Grand Canyon in time for breakfast at El Tovar Hotel. Motor drive in forenoon along famous River Road to Hermits Rest with leisurely stops at scenic points, return to El Tovar Hotel for luncheon. Afternoon motor trip to the Desert Watchtower via Kaibab National Forest and Yavapai Point Observation Station. Dinner at El Tovar Hotel. Leave Canyon for Chicago at 8:00 PM. Baggage may be left in Pullman during the day. Minimum rate $31 per person, includes tax, space in layover sleeper, sidetrip to Williams to Canyon, all meals and sightseeing tours as specified at Grand Canyon.

TOUR "B"—FIVE DAYS

CALIFORNIA MISSIONS — COAST HIGHWAY — MONTEREY BIG TREES — SAN FRANCISCO

(Will be operated for four or more passengers)

Leave Saturday morning April 25 for a leisurely three day all expense luxury motor tour along the historic and scenic coastal highway to San Francisco with two full days in "San Fran."

Enroute visit Missions at Santa Barbara, San Louis Obispo, Monterey and its Seventeen Mile Scenic Drive, Carmel, Big Trees at Santa Cruz, Stanford University and numerous points of interest. Stay overnight in the finest hotels at Santa Barbara and Monterey.

Three nights and two full days in San Francisco including hotel accommodations, sightseeing tour of the city and special Night Tour of Chinatown. Meals *not* included while in San Francisco. Rate, tax included $97.00 per person, basis two in a room. Add $9.00 for single room (total). Leave San Francisco Thursday morning April 30 for home.

TOUR "C"—SEVEN DAYS

YOSEMITE PARK — SAN FRANCISCO CALIFORNIA MISSIONS — COAST HIGHWAY — MONTEREY

(Will be operated for four or more passengers)

Tour "C" leaving Saturday, April 25, will follow the same itinerary to Monterey as Tour "B" thence a two and a half day side trip to Yosemite Park, staying at the Ahwahnee Hotel. Route from Park is through the San Joaquin Valley, Altamont Pass, Oakland and across the Bay Bridge to San Francisco. Three nights and two full days in San Francisco including hotel accommodations, sightseeing tour of the city and special night Tour of Chinatown. Meals *not* included while in San Francisco. Rate, tax included $165.00 per person, basis two in a room. Add $10.00 for single room (total). Leave San Francisco Saturday morning May 2 for home.

TOUR "D"—TEN DAYS: HAWAII AIR TOUR

(Will operate for any number of passengers)

A fine ten day tour leaving April 25 from Los Angeles via United Airlines Stratocruiser to Hawaii visiting the islands of Oahu Maui and Hawaii. Tour includes several sightseeing tours, hotel accommodations and transportation from Los Angeles to the Islands and return to either Los Angeles or San Francisco on May 3. Several days on Oahu staying at or near famous Waikiki Beach, sightseeing around the island including Honolulu, tropical Nuuanu Valley, Buddhist Temple, the Beautiful Mormon Temple at Laie. Air Trip to the Hilo on the island of Hawaii, sightseeing provided around the beautiful island with accommodations for two days at the Kona Inn. Tours visit Liliuokalani Park, Panaewa Forest, Kilauea's volcanic crater, Kau Desert, a visit to the famous Kona coffee center. Enroute day is spent on Maui Island visiting Haleakala Crater, Iao Valley and other scenic spots. Overnight in Hilo. Ample time is allowed on both Oahu and Hawaii Islands for independent action, shopping, sightseeing, or to just relax and enjoy this wonderful climate.

Minimum tour cost from $475.00 per person, tax included, basis two in a room. Sightseeing, hotel accommodations and transportation included. No meals except on plane enroute between Mainland and Honolulu.

ALTERNATE RETURN VIA S.S. LURLINE HONOLULU TO SAN FRANCISCO

Passengers wishing a longer stay in Hawaii may either fly to the Mainland or use this beautiful Matson Line steamer sailing May 9 for five-day sea trip, due San Francisco May 14. Rates for the extended stay in Hawaii and steamship accommodations quoted on application.

NOTE: The Transportation Committee acts only as agent for the owners or contractors providing means of transportation or other services, and all tickets are issued subject to any and all terms and conditions under which such means of transportation or other services are offered or provided, and the issuance and acceptance of such tickets shall be deemed to be consent to the further condition that neither the Transportation Committee nor any of its affiliates shall be or become liable or responsible in any way in connection with such means of transportation or other services or for any loss, injury or damage to, or in respect of, any persons or property howsoever caused or arising.

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INDUSTRIAL MEDICAL ASSOCIATION

The President's Page

IN A FEW WEEKS we will be closing the books on the present year and embarking on a new year. At a time like this it is well to take an inventory of ourselves, our assets, and our Industrial Medical Association. There are many questions which we might ask in taking our inventory. Have we made the personal gains which we set as our objectives, and what objectives do we plan for the coming year? Have we participated in the activities of our local medical groups; what have we done during the year to advance our phase of medical practice? If we do some true self-evaluation, of how much, or how little, we have contributed in time and effort to the cause of Industrial Medicine, then we are in a better position to set forth our resolutions and objectives for the coming year. If we are to strengthen our Association this year, it will demand the combined effort of every I.M.A. member. Will you do your share?

WHEN ONE becomes President of the Industrial Medical Association, or any other comparable organization, it is only natural to set objectives for some progress during your term in office. No officer can achieve these objectives without the utmost cooperation of all members.

With the responsibilities and honor of being President of the Industrial Medical Association, or comparable organization, one also assumes the problem of answering the questions and criticisms which may be directed to the organization. Questions and criticisms are only a natural course of events. In this manner members receive adequate and lucid information regarding the objectives of the association. If an officer is to fulfill the complete scope of his office, he should welcome such questions and criticisms. It is only by this means that there can be a complete understanding.

The Industrial Medical Association is an organization of physicians interested in the practice and advancement of Industrial Medicine. With this in mind, we should emphasize the importance of our Association to all physicians interested in this phase of medical practice. The I.M.A. has been designed to encompass the entire field of Industrial Medicine. It *is not* limited to full-time industrial physicians; it has definite provisions for the part-time industrial physician; the industrial physician who serves many plants; and those interested in the problems of research and teaching of Industrial Medicine. There are many consultants in the field of Industrial Medicine, and provisions have been made for these by Associate Membership.

RECENTLY our Association has received undue criticism from many physicians in private practice who state that our Association was designed only for the full-time industrial physician. Nothing could be further from the truth. The majority of our Fellows and Active Members are in the phase of industrial medical practice which does not fall in the category of full-time industrial physicians. Further criticism has been directed to your President in regard to the impression that the Association is dominated by full-time industrial physicians. Your President feels that this criticism is a little unjust. Having served more than 10 years, actively engaged in committee work and other business of the Association before becoming President, your President has observed that in spite of this criticism, the activities of the Association have usually been delegated to individuals because of their willingness to put forth some effort for the good of the Association. Individuals are appointed to committees, as counselors, and other activities, based on their personal qualifications and their indicated willingness to work, and *not* on their type of practice. The officers and directors are nominated and elected according to the provisions of the by-laws.

For many years your President has made a very sincere effort to obtain greater participation in our Association by *all of the physicians* interested and engaged in the practice of Industrial Medicine. It has been discouraging to receive criticism, when a sincere effort has been put forth to enlist all physicians interested in Industrial Medicine. Your present officers of the I.M.A. have but one objective—to achieve those things which will be of the greatest benefit for the I.M.A. If we can encourage greater participation in the activities of the Association in a broader scope of the practice of medicine, we will have gained much for our Association.

WHY NOT make a resolution for 1953 that you will become an active worker for the Industrial Medical Association and make your objective to gain at least one new member.

E. A. Irvin, M.A.

INDUSTRIAL MEDICAL ASSOCIATION

The District Counselors

Here are the Industrial Medical Association District Counselors. The territory included in each of the districts is listed on page 595.

Daniel L. Lynch, M.D.
District 1

Frank R. Ferlaino, M.D.
District 2

John L. Morris, M.D.
District 3

Glenn S. Everts, M.D.
District 4

R. Lomax Wells, M.D.
District 5

Allen M. Collinsworth, M.D.
District 6

Joseph T. Noe, M.D.
District 7

H. W. Lawrence, M.D.
District 8

Edwin DeJongh, M.D.
District 9

Gradie R. Rowntree, M.D.
District 10

Harry V. Sims, M.D.
District 11

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Emmett B. Lamb, M.D.
District 12

Daniel E. Dorchester, M.D.
District 13

Leonard S. Arling, M.D.
District 14

R. Emmet Kelly, M.D.
District 15

Kieffer Davis, M.D.
District 16

Carl U. Dernehl, M.D.
District 17

Nathaniel A. Thompson, M.D.
District 19

Lewis M. Overton, M.D.
District 20

Lloyd M. Farner, M.D.
District 21

Forrest E. Rieke, M.D.
District 22

John E. Kirkpatrick, M.D.
District 23

Clarence L. Lloyd, M.D.
District 24

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Frank Hatlelid, M.D.
District 26

W. Harvey Cruickshank, M.D.
District 27

Douglas R. Warren, M.D.
District 28

District 1, Dr. Lynch—Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island; District 2, Dr. Ferlaino—Metropolitan New York and Northern New Jersey; District 3, Dr. Norris—Western New York Area; District 4, Dr. Everts—Eastern Pennsylvania, Southern New Jersey, Delaware; District 5, Dr. Wells—Maryland, Virginia, District of Columbia; District 6, Dr. Collinsworth—Florida, North Carolina, Georgia, South Carolina; District 7, Dr. Noe—Western Pennsylvania, West Virginia; District 8, Dr. Lawrence—Ohio; District 9, Dr. DeJongh—Michigan; District 10, Dr. Rowntree—Tennessee, Kentucky; District 11, Dr. Sims—Alabama, Mississippi, Louisiana; District 12, Dr. Lamb—Illinois, Indiana; District 13, Dr. Dorchester—Wisconsin and Upper Michigan Peninsula; District 14, Dr. Arling—Minnesota, North Dakota, Iowa, South Dakota; District 15, Dr. Kelly—Missouri, Kansas, Nebraska; District 16, Dr. Davis—Arkansas, Oklahoma; District 17, Dr. Dernehl—Texas; District 18, Unnamed—Montana, Idaho; District 19, Dr. Thompson—Wyoming, Colorado, Utah, Nevada; District 20, Dr. Overton—Arizona, New Mexico; District 21, Dr. Farner—Washington; District 22, Dr. Rieke—Oregon; District 23, Dr. Kirkpatrick—Northern California and Bay Area; District 24, Dr. Lloyd—Southern California; District 25, Unnamed—Alaska; District 26, Dr. Hatlelid—Territory of Hawaii; District 27, Dr. Cruickshank—Eastern Canada; District 28, Dr. Warren—Mid Canada; District 29, Unnamed—Western Canada.

ASSOCIATION NEWS

CHARLES L. MAXWELL, M.D., has been appointed to the position of Deputy Director in Charge of Health Services of the State of Illinois Civil Defense Agency, with headquarters at the Museum of Science and Industry, Chicago. DR. MAXWELL graduated M.D., Ohio State, 1916, and is a member of I.M.A. through the Central States Society. He was formerly with the Indiana State Board of Health, and more recently Director, College Health Service, Eastern State College, Charleston, Illinois.

IN A LETTER dated October 28, to the Managing Director, the following comments were made by M. G. WOOLFF, Medical Officer, General Motors South African Limited, Port Elizabeth, who was a guest at the 1952 Industrial Health Conference in Cincinnati: "In acknowledging receipt of your letter informing me that I had been elected a member of the Industrial Medical Association, I wish to say how much I appreciate this privilege. Particularly was I glad to receive your personal note. Both my wife and myself look back on the week that we spent with you at Cincinnati with extreme pleasure. In an extensive tour of the United States, Great Britain, and the Continent, we can think of no place where we met so many charming people together, and where the warmth of the hospitality defies description. Our experience in your country was indeed a wonderful one. I learned much from you all, particularly wherein lies the origin of the phrase 'welcome stranger'."

DR. EMMA DOWLING KYHOS was interested to know the number of women physicians and surgeons in the membership of the INDUSTRIAL MEDICAL ASSOCIATION. It was difficult to give her the exact number inasmuch as about 10% of the members list their given names by initial only; however, 20 Fellows and members were so identified.

Recent Deaths

WESTERN INDUSTRIAL MEDICAL ASSOCIATION advises that DR. CLIFTON E. GAGE, Los Angeles, died on October 27. DR. GAGE had been inactive for some time, but was formerly plant physician for Firestone Tire & Rubber, and associated with DR. BEN FREES, on the surgical staff of the Hospital of the Good Samaritan. He was graduated from the West Coast Medical College in 1910, and was an I.M.A. member for many years.

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BOOKS

Medicaments

SKIN THERAPEUTICS. M. K. POLANO. Elsevier Press Inc., New York, 1952, pp. 267, $6.50.

INDUSTRIAL physicians everywhere are aware that the number of different skin lesions from occupational causes is small. Contact dermatitis from a score of unlike causes leads to highly similar clinical appearance. These same physicians well know that with or without treatment in the absence of additional exposure, most dermatitis speedily will disappear and that over-treatment always is a jeopardy. But, the patient is not satisfied and hies away to some other physician who becomes impressive if not helpful through hodgepodge applications of miscellaneous ointments, salves, and lotions. Right here is where this book brings its usefulness. The author is a genius in his knowledge of pinpoint advantages in choice of simple medicaments. The emphasis of this book is on medicaments and not on full regimens for any named affections. He does not, for example, say "Here you have a troublesome case of chloracne, and here is just what you should do day by day for speedy recovery." Rather, he says, "If you want to obtain such and such action, here is just the medicament that will bring about that end." Precise compounding with wide opened eyes as to niceties in physical qualities of medicaments everywhere appears in this book. Pharmacists will revel in the consideration directed to their art.

This book originated in the Netherlands. It has an inescapable European flavor but it was written for international consumption. Too many pages are devoted to the drugs of other countries. For example, a long listing of Italian dermatotherapeutic drugs is fine for the Italians; so also the one for the Dutch, the Belgians, etc., but all such has little value for United States physicians.

This book is garnished with the solidity of the old-fashioned. That statement is made in no derision. We need the virtues of the old. But, the author appears wholly unacquainted with the spate of brand new skin offenders creating medical despair and calling for precise treatment. He displays no familiarity with the requirement of such conditions as dermatitis from stuck-on artificial finger nails or skin affections from beryllium. As to skin therapeutics, this is a grand adjunct book—perfect as far as it goes, but it lacks completeness.

A Professional Book

PREVENTIVE MEDICINE AND PUBLIC HEALTH. WILSON G. SMILLIE, M.D. The Macmillan Company, New York, 1952, pp. 590, $7.50.

THIS book is a result of constructive thinking and experience. The stated purpose is far exceeded. The book was planned only as an introduction to public health for medical students. Specifically, it is denied that it is designed for health officers, epidemiologists, sanitary engineers and such. Yet, this is a professional book, thoroughly good for medical students but equally good for the professional public health worker. After all, the author is the public health workers' public health worker. The mentioned constructive thinking ever appears, one detail of which is in the distinction drawn between preventive medicine and public health. Another indication may be found in this paragraph:

"The public health expert who has been so successful in prevention of contagion or in lowering of infant mortality has difficulty in accepting the fact that when he applies himself to prevention of degenerative disease, no matter how successful he may be, the death rate will go up and not down. For example, the greater the activity in prevention of the ravages of heart disease, the higher will be the death rate from heart disease. The reason for this paradox of course is that the longer a man survives, the surer he is eventually to die of degenerative disease—particularly heart disease. Thus, strange as it may seem, an increase in the crude cardiac death rate represents not failure but success in preventive medicine."

The flavor of this book is the newness of the public health world and the inevitability of swift change, the fluidity of requirements. As the author states, even the yardsticks for measuring success in preventive medicine must be renovated. This need for change is reflected in this paragraph:

"Another change in our concepts is that preventive medicine must be thoroughly incorporated in clinical medicine and not be presented as a special block of knowledge which is to be added to the foundation. Preventive medicine is the mortar and cement that intermingles with the other foundation stones, binding the whole together, and giving it strength."

There is obvious awareness that to most physicians public health is distasteful, albeit more often on a passive basis which, after all, may be the most deadly form of resistance. All this speedily would be changed if successive increments of medical students might grasp fully the essentiality of oneness between clinical and preventive medicine.

The attitude of the author toward occupational health, which he terms industrial hygiene, is now quoted:

"Industrial hygiene is that community function which deals with the protection of the health of the wage earner while he is actually at work. It is an important part of the all-inclusive, community-wide plan for health promotion of all age groups and of all elements in the community. It is, in reality, a subdivision of adult hygiene, with a special interest in the age groups of 20 to 65. Industrial hygiene has one element which sets it apart from the other health activities, in that the responsibility for the success of this work is threefold: the burden rests primarily upon the official health administration of the community, but is shared by the employer and the wage earner."

This attitude, which is a common one, draws fire from industrial physicians. Rightly they protest the concept that the burden of occupational health rests primarily upon the official health administration of the community. Instead, overwhelmingly the employer has been responsible for the major accomplishments in occupational health. So integrated into total work activities of industry are good programs of worker protection that to the industrialist the medical department is as much a part of industrial organizations as the purchasing or accounting department. No less, the alliance between the public health officer and the industrial physician is an admirable one. Without the ministrations of the public health officer in community protection,

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there would not be so many workers appearing at their respective work posts, there to be protected by the special skills of the industrial physician.

Vocational Problems

VOCATIONAL SERVICES FOR PSYCHIATRIC CLINIC PATIENTS. THOMAS A. C. RENNIE, M.D., and MARY F. BOZEMAN. Harvard University Press, Cambridge, 1952, pp. 96, $1.25.

THIS study is an exploration of the extent to which clinic patients presented vocational problems, of the need among those patients for vocational service to help them resolve their vocational problems, and of the ways in which clinics and vocational agencies can work effectively together so that patients with vocational and emotional problems will receive the maximum benefit from the coordination of services.

This study indicated the following:

1. Approximately 80% of the patients brought to their psychiatrists vocational problems which were either coincident with or a result of their over-all emotional problems.

2. Approximately one-third of the patients who presented vocational problems, or about one-fourth of all patients in this study, received vocational service in addition to psychotherapy.

3. Nearly two-thirds of the patients who presented vocational problems were either helped toward the resolution or lessening of those problems with no service other than psychotherapy, or presumed to be unamenable to appreciable help by present facilities for service.

4. The proportion of patients who received vocational service varied considerably from clinic to clinic, depending in each on size and in-take policies, social service function and coverage, and characteristics of the group of patients served.

5. Groups of patients who most commonly needed vocational service in addition to psychotherapy were: patients under 30 years of age, particularly high school and college students; patients with severe physical handicaps as well as emotional problems; recent immigrants; and patients over 50 years of age.

6. In spite of the recognized need for vocational service for patients in older age groups, the result of vocational service for these patients was poor. Counseling and placement service adapted to younger people's needs and labor market demands were generally unsuitable and ineffective in meeting the needs of older psychiatric clinic patients.

7. Best results occurred when clinic personnel and vocational service personnel operated as a team, determining the patient's total needs and planning total service by pooling psychiatric and vocational evaluation.

Atmospheres, Plus and Minus

DECOMPRESSION SICKNESS: Compiled under the auspices of the Subcommittee on Decompression Sickness, Committee on Aviation Medicine, Division of Medical Sciences, National Research Council, Washington, D.C. W. B. Saunders Co., Philadelphia, 1951, pp. 437.

THIS is another in that series of reports sponsored during the war period by the National Research Council. During the war years such matters were kept under wraps and only at this late time is this helpful material released for the benefit of the scientific public. This publication has no individual author, but is the product of an able committee and of numerous contributors not necessarily serving on the committee.

It well appears that, physiologically, man belongs on the surface of the earth. He has no physiologic business deep down under water or high in the air. So soon as he far departs from his earth surface adaptation, he encounters physiologic difficulties and, somewhat strange to say—but understandable—in part, the same dysfunctions whether deep in water or high in air.

Ever since 1660, when Boyle studied animals after his creation of the first vacuum pump, it has been the realization that atmospheric pressure departures from the usual are conducive to damage. The earliest textbooks on occupational diseases in this country embraced consideration of caisson disease. In medical circles the disposition long has been to regard this condition as a medical oddity little calling for extensive concern. Actually, it is probably true that not since 1900 has there been a year when caisson disease was not significant in at least some one area of the country, and certainly throughout that period maritime operations have been plagued with caisson disease on a highly practical basis. Shrőtter and his associates in Austria in 1900 provided publications that for four decades dominated diving practices, although Leonard Hill's (1912) publication greatly contributed to the protection of the diver. Hill, in his publication, refers to the description of others, of Japanese women divers who apparently without protection descend into water as deep as 120 feet. According to him, these women took over this operation from their husbands because the husbands who suffered severely from cold at diving depths no longer were able to propagate. Clever fellows these Japs! It might become possible to persuade all women that exposure to cold eliminates their procreativeness. Therein are the implications of an enormous potential boon for all males. With women assuming all work operations in cold weather, malekind might go in for happy hibernation, thus preserving one of their essential functions.

The advent of aviation enormously has extended the decompression story. Impetus has arisen and medical obligations have led to a new aspect of occupational health—aviation medicine. Aviation medicine, in some of its aspects, plus decompression sickness in its entirety, provides the subject matter of this authoritative report. The Shrőtter and Hill reports, good as they were, after dominating the medical picture for some four decades, are replaced by this new authority, the National Research Council's Report on "Decompression Sickness."

Paracelsus

MAGIC INTO SCIENCE (The Story of Paracelsus). HENRY M. PACHTER; Henry Schuman, Inc., New York, 1951, pp. 302, $4.00.

OVER the years, the pages of this journal have carried more than one portrayal of the historic activities of Paracelsus (Philippus Theophrastus Aureolus Bombastus ab Hohenheim) in occupational health. Paracelsus, long labeled "quack," is now emerging as perhaps the commanding brain of the European Renaissance. This present book is not addressed to physicians or even to scientists in

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general, but to the public. No less, no industrial physician will fail to profit by this layman's story of the fabulous Paracelsus and his period. The author, somewhat by way of summary, uses the language shortly to follow which little may be improved:

"One of the most curious, most contradictory and most consistently fascinating figures of the Renaissance was the physician and scientist Theophrastus, known as Paracelsus—'physician whose hand God had blessed.'

"He has greatly intrigued imaginative writers—giants like Goethe, Marlowe, and Browning (one of whose major works is the poetic drama, *Paracelsus*), and, in our own day, Thomas Mann.

"He has claimed the attention of medical writers and historians like Osler and Sigerist, cultural historians like Ernst Cassier and Hiram Haydn, great psychiatrists like Jung and Erich Fromm.

"In popular legend and in poetry he has lived on as Faustus, patron saint of science but also symbol of man's blasphemous aspirations to rival God.

"His figure has acquired new prominence in our time for his extraordinary anticipations of modern psychiatric findings, and for his democratization of learning by writing and teaching in the vernacular and defying professional caste distinctions.

"Controversy over Paracelsus is never-ending. Estimates range from evaluations of him as the most profound mind in the history of German culture to summary dismissal as a quack; from proclaiming him founder of chemotherapy and forerunner of television, radar, and other modern discoveries, to denying scientific value to any of his contributions."

So protean was Paracelsus that almost every science, and some pseudo-sciences, claim him as the master. Occupational health insists upon a major claim; the bio-chemist has equal justification for adherence. He was, perhaps, the father of chemotherapy; psychiatry leans heavily upon him historically. He was great enough to be shared and enough to go around.

One essence of historic fame is not to be discovered too soon. Another is not to be accepted but to become the object of controversy. Paracelsus unknowingly provided these constituents for ultimate fame. Possibly that fabulous one knew what he was doing when he created for himself the assumed name Paracelsus—"better than Celsus"—and so he was.

Twenty Miles . . . .

HEALTH NEEDS AND HEALTH CARE IN TWO SELECTED MICHIGAN COMMUNITIES: CHARLES R. HOFFER and CLARENCE JANE. Special Bulletin 377, Michigan State College Agricultural Experiment Station, East Lansing, Michigan, 1952, pp. 30.

THE late, and gracious, Rufus Southworth, a few years ago, precariously travelled from Pitcairn Island to New Zealand accompanying a native in need of special medical care. The journey, there and back, involved a neat 6,000 miles. The patient was restored to health. There is no record that any complaints arose over required mileage.

Now come these workers in a department of Sociology and Anthropology in an Agricultural Experiment Station with a report on a study of health and medical affairs in two small communities. One of the issues, albeit a minor and not overemphasized one, was the distance to the nearest medical services in one community. Travel of the enormous distance of 20 miles was entailed for those citizens, 80% of whom possessed automobiles. Shade of Rufus! It did not develop that the health of this neglected and remote population was much worse than that of its more favored co-citizens in another community with physicians next door. Apparently, in both groups, 50% never heard of their own existing public health facilities. Neither group displayed any gleaming zest for the buoyant radiant health that other books proclaim as procurable.

Maybe the method of approach was wrong. These agricultural field workers on the fringes of public health interviewed one family in every 50 in one community and one in every 10 in the other. A total of only 36 families was interrogated in one test area. Unfailingly, the investigators may compose convincing arrayals that the procedure was statistically sound. Granting all and condemning nothing, would there not be some virtue in sending out agricultural public health missionaries shouting to their clientelle that health for the group, if not for the individual, always is procurable in present-day United States; that "just not getting round" to the amelioration of destructive ills is one of the unpardonable sins, not of physicians, but of those possessed; that part of the burden of the acquisition and maintenance of health rests upon those who profess a desire for health, but resist mightily; that the onerous distance of 20 miles somehow or other might be surmounted, just like going to the movies at the same distance?

Come again with an investigational report of that miracle, then rejoicing will be teeming.

Legal Conference

TRANSACTIONS OF THE LEGAL CONFERENCE OF INDUSTRIAL HYGIENE FOUNDATION. Transactions Bulletin No. 21, Mellon Institute, Pittsburgh, 1952, pp. 22, 75 cents.

THE Transactions Bulletins of the Industrial Hygiene Foundation have now reached the substantial number of 21. This particular one represents the proceedings of the 16th Annual Legal Conference. Two of the three articles appearing therein deal with compensation, the third, and most important, is built around industrial water pollution abatement, chiefly in its legal aspects.

LETTERS

Write to Him

TO THE EDITOR: As a recently appointed Industrial Medical Officer in charge of 8,000 workers and officials, located in 30 to 40 places, I would like to get into contact with a physician of a small plant industrial medical service in the U.S.A. for exchange of experiences. My present main preoccupations are organizational problems and prevention of accidents in harbors, railways, small repair shops. Could you arrange such a contact?

—DR. PAUL BERNSTEIN,
Haifa,
43 Zinober Str.,
Mt. Carmel.

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PRODUCT RESEARCH AND DEVELOPMENT

Articles selected for publication in this section of the Journal are related to commercial or prospectively commercial products and, by requirement, are written by physicians, represent original work not previously published, and have some flavor of newness. These articles are published so that newer products may become the recipients of further consideration and appraisal in the industrial medical field. The claims and conclusions of authors are not necessarily approved or accepted by this Journal.

Skeletal Muscle Spasm Empirically Treated with Mephenesin (Tolserol) and Diathermy

Analysis of One Hundred and Six Cases as Compared with Fifty-Nine Control Cases

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IN INDUSTRIAL medicine "backaches" and other conditions with associated muscle spasm present a formidable problem. The industrial physician frequently does not have adequate staff or sufficient time to give each of these cases a complete orthopedic work-up. Consequently treatment is based on symptomatology and consists of such measures as injections of local anesthetics into the affected area, diathermy, taping, counterirritants, analgesics, rest, and other symptomatic of supportive measures. The results of such treatment are usually discouraging. The recovery time is prolonged and the psychological outlook of the patient is poor.

A promising method of treatment, which is outlined in this article, involves the oral use of mephenesin.* Mephenesin, a drug described by Berger and Bradley in 1946, is an alpha substituted glycerol ether with a relatively low toxicity and with an unusual ability to relax skeletal muscle that is in spasm.[1] This drug is rapidly absorbed from the gastro-intestinal tract but its action is more profound, rapid and consistent when given intravenously.[2,9,10] It is more highly selective than most muscle relaxants and it affects the muscles of respiration last.[1] The site of action of this drug is thought to be on the internuncial cells.[4] Multisynaptic reflexes are depressed while monosynaptic reflexes are not affected by therapeutic doses.[5] There is also a secondary therapeutic effect which is of interest. Mephenesin has been described by several authors as promoting "a state of relaxation," "euphoria," and "freedom from nervousness and tension."[7,8] The promotion of these states in cases with skeletal muscle spasm, especially in individuals subject to low back pain, is highly desirable.

Toxic effects are negligible with the recommended dosages.[1,9,12] Rarely, mild nausea and dizziness may appear. Transient hematuria and phlebitis may occur with concentrated intravenous solutions, but this hazard is practically eliminated when the recommended 2% solution is used.[2,11,12,13,14]

Although investigators have agreed as to the value and effectiveness of this drug in relaxing spasm of skeletal muscle when it is given intravenously reports on the oral use of mephenesin have been equivocal.[2,9,10] When I first began to prescribe mephenesin orally, the results I obtained were comparable to those described by Schlesinger[2]: "The results are generally disappointing, and although occasionally there is dramatic response, failure to obtain a worthwhile effect is the rule." I then began to use orally administered mephenesin combined with diathermy, whereupon the percentage of satisfactory results was raised significantly.

Methods

THE majority of these cases were treated at a large military establishment employing over 9,000 civilian workers engaged in overhauling and repairing military aircraft. A smaller part were seen at the Student Health Service at the University of Wyoming. Since time precluded a complete orthopedic examination of most of the cases, an empirical course of treatment was set up for all cases with a degree of pain and muscle spasm sufficiently severe to interfere with the performance of regular duties by the patient. However, the patients were briefly questioned and examined to rule out obvious cases of organic disease upon which mephenesin would exert no effect, e.g., prostatitis, kidney disease, etc.

Treatment consisted of two half-gram oral mephenesin (Tolserol) tablets, followed in 15 to 30 minutes by diathermy to the affected area. Mephenesin was then continued in doses of one gram four times daily for two days. When necessary, the dosage was extended one additional day. Diathermy was repeated once or twice daily, depending upon the severity of the condition.

*Generic designation by the British Pharmacopoeia Commission and the Council on Pharmacy and Chemistry of the American Medical Association.

The mephenesin and the placebos for this series of cases was supplied by E. R. Squibb and Sons under their brand name Tolserol®.

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Several patients with a severe degree of pain were given a single, initial dose of a half a grain of codeine and 10 grains of aspirin; otherwise no other medication or treatment was given.

The patients were taken as they came in, without any selection or grouping as to the type or degree of disability from which they suffered. The first group of controls was given aspirin, grains 10, every three hours while awake, and diathermy; the more severe cases were given in addition a quarter or a half grain of codeine, to be taken with the aspirin. The second group of controls was given placebos instead of aspirin. The placebo was identical to the mephenesin (Tolserol) tablets in size, shape and color. Both the placebo and mephenesin had been coated in order to make them tasteless. There were 32 patients in control group one and 27 in control group two.

In the group of patients using the placebos a special effort was made to eliminate any possibility of prejudicing the results. This was done by having one individual dispense the drug (or placebo, as the case might be), and a second individual evaluate the results. The latter had no knowledge of whether the patient had received mephenesin or the placebo. Mephenesin and the placebo were dispensed to alternate cases.

The result was considered satisfactory if the patient's symptoms had disappeared to such an extent that he could resume his regular duties on or before the third day of treatment. There were cases severe enough to require ambulance transportation in both the test and the control groups. Cases of such a mild degree as not to interfere with the patient's regular work were not included.

Results

OF 106 cases receiving a combination of mephenesin and diathermy, 94, or 88.7%, returned to full duty on or before the third day with minimal or no symptoms. In the control group of 59 cases, 28, or 49.2%, were able to return to full duty with minimal or no symptoms on or before the third day. This represents an increase of approximately 40% in the number of patients able to return to their full duties on or before the third day of treatment, when a combination of mephenesin and diathermy was used. After the final tabulation of results, the cases were placed in groups according to their symptom complex. The results of this grouping appears in Table I. The results for each group roughly parallel the results for the entire series.

In the cases involving pain and spasm of the trapezius muscle a satisfactory result was obtained in both the test and control groups. The only significant difference in these two groups was that the cases that were put on mephenesin had an average recovery time of 1.7 days, whereas the control group had an average recovery time of 2.2 days. In a larger group of patients, this decrease in recovery may prove to be significant.

TABLE I.

Type	Number of Cases	Satisfactory	Unsatisfactory
Lumbo-Lumbosacral			
Tolserol (Mephenesin)	45	39	6
		86.7%	13.3%
Controls	34	14	20
		41.2%	58.8%
Sacro-iliac			
Tolserol (Mephenesin)	7	7	0
		100%	
Controls	5	2	3
		40%	60%
Trapezius			
Tolserol (Mephenesin)	23	22	1
		95.7%	4.3%
Controls	8	8	0
		100%	
Shoulder Pain			
Tolserol (Mephenesin)	12	10	2
		83.3%	16.7%
Controls	5	2	3
		40%	60%
Miscellaneous			
Tolserol (Mephenesin)			
Sacrococcygeal	4	3	1
Dorsal Pain	3	3	0
Arthritis Spine	1	1	0
Muscle Contusions	3	2	1
Sciatica	2	1	1
Pulled Leg Muscles	2	2	0
Pectoralis Strain	2	2	0
Pain Wrist Muscles	1	1	0
Painful Knee with Spasm	1	1	0
Total	19	16	3
		84%	16%
Miscellaneous			
Controls			
Dorsal Pain	3	2	1
Contusions (Muscle)	1	0	1
Sciatica	1	0	1
Muscle Spasm			
Thigh (Severe)	1	0	1
Stiff Legs	1	1	0
Total	7	3	4
		42.9%	57.1%

In both the test and the control group, the numbers for the individual groups are too small to be of statistical significance by themselves, except for the lumbo-lumbosacral group. The results in this group were excellent. The 45 test cases showed 86.7% satisfactory results as compared to a 41.2% satisfactory result for the 34 control cases.

Comment

THE results of this study tend to confirm the following statement by Schlesinger[2]: "It is in the common wear and tear syndromes of everyday practice that myanesin should prove of most value. Skeletal muscle spasm is a factor of importance in the acute low back and frozen shoulder syndromes, the arthritides, and countless other acute disorders of the musculo-skeletal system.

A drug which will break up the well-known vicious cycle of pain and muscle spasm is most welcome to the medical armamentarium. Long-term therapy is usually not as necessary as abrupt relief of the acute attack...."

For the entire group the results are of statistical significance when tested by the formula

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$$T = \frac{P_1 - P_2}{\sqrt{Pq\left(\frac{1}{N_1}+\frac{1}{N_2}\right)}}$$

The chances are about one out of 10,000 of getting a difference this great if the treatment with mephenesin and diathermy had no effect. Definite conclusions should not be reached, however, until a much larger series of cases is studied, but it is significant that all groups roughly parallel the results obtained for the entire series.

In the 106 cases on oral mephenesin tablets, no toxic effects were noted and in none of the cases did medication have to be discontinued.

Summary

ONE HUNDRED AND SIX cases of patients with conditions associated with skeletal muscle spasm were treated empirically with mephenesin, grams one, four times a day, and diathermy. Ninety-four of these cases, or 88.7%, showed a satisfactory result by their ability to return to their full duties on or before their third day of treatment.

These results confirm those obtained by Herman and Smith.[15] A series of 59 control cases treated with diathermy and aspirin or placebo showed that 29, or 49.2%, obtained satisfactory results by their ability to return to their full duties on or before the third day. This increase of 39.5% in the number of satisfactory results indicates that mephenesin, a skeletal muscle relaxant, combined with diathermy shows promise of being a valuable addition to the armamentarium of the physician treating these types of cases. The therapeutic effect of mephenesin seems to be increased when it is combined with diathermy. No toxic effects from mephenesin were noted in this series.

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At the Council Table

WHEN I review the list of my friends who are eminently successful in industrial medicine, I find in each instance that they have a special place at management's table and that their voices are heard with a respect equal to that of other specialists on the team. This is so because they have learned to communicate. They have learned production methods. They have helped to tackle production problems. They know the merchandising of the company's products and they have acquainted themselves intimately with the problems of labor and the manifold problems of government and governmental demands. In a word, in becoming more than the doctor-in-overalls and tinhat, once the picture of the functioning industrial medical man, they are now more than that: they are the doctor at the council table. As such, they speak the language because each one is interested in speaking the language. Thus, each one is able to share his special skill and professional knowledge with his professional equals and in so doing he has come to enjoy the confidence of management not for his clinical skill alone, but for his success in both clinical medicine and in industrial production—a Special Staff Officer making his special contribution to those who have learned to appreciate him.

—From "How to Apply Our Present Knowledge," by HARDY A. KEMP, M.D., Professor of Preventive Medicine, Baylor University, at Industrial Hygiene Foundation's Seventeenth Annual Meeting, Pittsburgh, November 19, 1952.

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NEWS, COMMENT, OPINION

IT IS NOT company policy to have people go home on Friday night after a week's work anything like as tired as they come in on Monday morning after the rigors of our American weekends," says L. R. Boulware, Vice-President in Charge of Employee Relations at General Electric.

—Quote, in *Management Review*, October, 1952.

Contact Dermatitis

CONTACT dermatitis caused by scrubbing, local anesthetics, rubber gloves, and antiseptics and antibiotics is the most frequently encountered occupational injury suffered by physicians.

—J. F. in *Ohio State Med. J.*, quoted in *West Virginia Med. J.*, November, 1952.

"It Has Worked . . . ."

HAROLD S. VANCE, Chairman, Board of Directors, Studebaker Corporation, at the October meeting of the Magnuson Commission: "The Company's employee-controlled medical program is receiving full cooperation from the local physicians and the medical society. Let us go as far as we can on the voluntary basis. It has worked for us and it can work for others."

The Ulcer Parade

RESULTS of a recent poll by medics on which industry leads the ulcer parade were interesting. The list ran in this order: advertising men, film and play producers, newspapermen, public relations men, doctors, wall streeters, and lawyers. Actors, supposed to be the most tempermental and emotional of all, were way down on the list.

—*Diner's Club News*, November, 1952.

Brazil Stamp

BRAZIL has issued a special stamp honoring the Second Congress of Industrial Medicine recently held in Rio de Janeiro. The 3.80 cruzeiro brown and green adhesive shows a global view of the South American continent at left, a caduceus, and an aerial view of Rio harbor.

—*Christian Science Monitor*, October 16, 1952.

Four Times Safer

THE president of du Pont once righteously pushed an employee into a creek—after finding the man smoking near gunpowder. That was Henry du Pont, president 1850-1889. Today du Pont issued a booklet on safety, reporting employees were just about four times safer at work than at home or any place else, even when their jobs involve high explosives or volatile chemicals. The safety program now is based on education rather than rules.

—*New York World-Telegram*, October 28, 1952.

Training at Tulane

TWENTY-FIVE medical officers of the U.S. Air Force toured the Michoud Ordnance Plant of the Chrysler Corporation, which is making tank engines for U.S. Army Ordnance. The officers are now taking a special course of training in industrial medicine and safety work at the Tulane University School of Medicine. They were led on the tour by Warren H. Reinhart, instructor in the course, and were welcomed to the plant by Col. G. G. White, Chrysler personnel manager, and visited the plant's modern hospital to hear a discussion of industrial medicine and safety practices.

—*New Orleans Item*, October 13, 1952.

U. of C. Health Department

ON JANUARY 25, 1952, the Board of Regents authorized the employment of an industrial health engineer, together with technical and clerical assistance, to make a complete survey of occupational health hazards on all campuses of the University of California. On April 1, 1952, Mr. Fred Ingram took up his duties as chief engineer and administrative head of the new Department of Occupational Health. To date the emphasis has been placed on gathering of survey data, consultation with individual departments on the various campuses, studies of workroom conditions, and making recommendations for alleviating hazardous conditions.

—*The Journal-Lancet*, November, 1952.

The Results Are Often Gruesome

PROFESSIONAL incompetence and commercialism on the part of many physicians are endangering this country's largest nongovernmental medical program, according to its executive director. Serious charges which have

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Medical Director: (IM-131) Beautifully trained with about eight years as Medical Director of one of America's leading companies. Johns Hopkins graduate. Master's degree in medicine; Certified Internist; outstanding man with demonstrated ability to head important industrial medical department. Highest references.

Medical Director: (IM-132) Following three years as Medical Director of large state institution, this well qualified surgeon has served for five years as Chief surgeon and Medical Director with a large heavy industry manufacturer; seeks better school facilities for children; excellent references.

Bacteriologist: (IM-133) 33; B.S., Pharmacy; M.S., Bacteriology; minors in chemistry, well qualified in biochemistry, hematology, parasitology, serology and chemistry; seeks industrial appointment.

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Medical Director: Construction project; top secret location; about $15,000. (D-122).

Medical Director: Complete charge all policies; leading company; three plants with headquarters in New York City; requires outstanding man. (IM-123).

Medical Director: Large company, one of leaders in the field; several plants; 5000 employees; attractive university city 350,000; East. (IM-124).

Medical Director: Large ordnance works; Will be responsible for the medical and surgical care of all employees; $10,000; may also build own private practice; fine town 10,000; Iowa. (IM-125).

Associate Medical Director: Leading insurance company; under 31; training as internist or cardiologist desirable; preferably with life insurance home office experience; East; (IM-126).

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been made by Dr. Warren F. Draper, supervisor of the United Mine Workers' $50 million health program, are made public for the first time.... along with his suggestions for abolition of the evils by AMA and its constituent societies. Unnecessary surgery, mismanagement of patients, indiscriminate use of antibiotics—these are among Dr. Draper's allegations. He states, further, that these deficiencies and abuses have been confirmed by an AMA-sponsored survey team that went into some of the mining regions a few months ago. "Of the several thousand physicians who care for UMWA beneficiaries on a fee-for-service basis in some 26 states, Dr. Draper says: 'There are those whose services need not be questioned. There are others whose motivations and qualifications, as we know, are such that the interests of the patient are not well served and the money paid them by the Fund is largely wasted.' Doctors are all too few in mine fields, he says, so that the Fund frequently has to 'utilize the service of the incompetents' who, though well intentioned, are improperly trained and in a state of professional deterioration. Some practitioners, Dr. Draper continued, will undertake work for which they know they are not qualified just to get the fee, and 'the results are often gruesome.' Unnecessary surgery is not uncommon, he asserted, and as for 'indiscriminate and irrational use of the antibiotics,' the miners' medical director observed that 'the miners unwittingly are doing their share in the development of penicillin-resistant strains of bacteria.' He said that efforts which have been made by Fund's area medical directors to achieve reforms through intervention of state medical societies have been futile."

—*Public Health Economics*, 9:10 (November) 1952.

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The Periodic Examination

THE PERIODIC physical examination is equally as important as the pre-employment examination. Its purpose is to detect early signs of occupational and non-occupational illness, and to conserve the health of employees by the early detection of illness and degenerative diseases attendant upon the ordinary processes of wear and tear and aging. In certain industries in which special hazardous processes exist, special types of examinations are done at intervals determined by the severity of exposure. For example, in the lead industry or the benzol industry, frequent examinations of the blood are performed to detect early signs of intoxication from these materials. In many plants, it has been the policy to examine all the workers at intervals of two or three years, often with the exception that older workers, particularly those in more hazardous occupations, are examined yearly. In instituting the plans for periodic examinations in industry, there are a number of important considerations to be borne in mind. These have been

outlined by the Metropolitan Life Insurance Company as follows: "(1) Examinations should be done with the cooperation, approval and good will of the workers. A publicity campaign may help to enlist the interest of the employees by teaching how great a benefit such examinations are to the workers themselves. (2) It is judicious, if the examination is an entirely new departure, to begin the program for physical examinations with the institution of employment physical examinations for new employees—offering 'health examinations' to employees as a voluntary measure. The older personnel has an important influence in the plant, and it is desirable that they should heartily believe in the idea before any compulsion is brought to bear. (3) The examination should always be planned in such a way that an opportunity is given for personal conversation of the applicant with a doctor or nurse in order that the object of the proceeding may be carefully explained in each case. Equally, the findings of the examination should be tactfully and patiently interpreted to the examined without unduly alarming him, of course, before he leaves the medical department. (4) The confidential relationship between patient and doctor should be kept, and all records of physical examinations should be filed in the medical department and be solely under the control of the medical personnel. Many misunderstandings may be averted if this rule is scrupulously regarded and the fact that it *is* so scrupulously regarded is constantly impressed upon the minds of the workers. (5) A good method for establishing in the minds of the workers conviction of the sincerity of the management's motive as well as thorough confidence in the medical personnel, is to begin with the examination of the executives. Unless the service is good enough to command the respect of the executives, it is not good enough for the employees. Moreover, this is sound procedure from many angles, since officials, managers, and laymen in the company benefit just as surely from the examination as any of the workers. A breakdown in health among the higher paid personnel upon whom great responsibility rests is a more costly and more disastrous occurrence than physical disability of many of the less highly trained workers."

—From "Pre-employment Medical Examinations to Select—Not Reject," by LESLIE W. FOKER, M.D., in *Connecticut State Med. J.*, November, 1952.

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'general,' in which the patient lies down, with the eyes closed, and progressively relaxes all of the body musculature . . . . 'Differential' relaxation is the process of freeing muscles and muscle groups from tension when they are not needed to perform an act. Reading, talking, golfing, eating, etc., can be accomplished just as well or better if only the essential muscles are used, and others are kept from 'hamming-up the act' . . . . Muscle pain may follow sustained contraction in tension states. Anxiety and fatigue may result in spasms of the intestinal tract. Emotion may be an adjunct cause in hypertension. Even infertility in the female has been blamed on tubal spasm in emotionally disturbed women. Sleep should be induced by general relaxation, rather than by the chronic use of sedatives.

—GUILLERMO OSLER, M.D., in *Arizona Medicine*, October, 1952.

Antiquated Industrial Fees

INDUSTRIAL MEDICAL and surgical fees, long a bone of contention in California, came again into the limelight last month, when an interim committee of the State Senate devoted particular attention to them. As a result, medicine had its first opportunity in years to present a review of the history of such fees and to point out the present predicament of the doctor in trying to obtain adequate payment for his vital services in industrial accident cases. Oddly enough, the physician is recognized by all concerned as the keystone in handling all industrial accident cases but is nonetheless lightly brushed aside by all other parties when the value of his services is considered. To the injured workman, the physician is the skilled practitioner who heals his injuries and restores him to full vigor and function; at the same time, the physician is treated as a "company man" who is ever ready to testify disparagingly on the workman's claim for compensation payments. To the insurance carrier, the doctor is a supplier of services which are bought in a competitive market, to the financial advantage of the corporation underwriting the risk. To the Industrial Accident Commission, the physician is a necessary element in each case but still a self-sufficient individual who must look to himself to secure just payment for his services. To the state Insurance Commissioner, the doctor is merely a bargaining agent whose demands for compensatory fees may result in increased premium rates for disability insurance. This unenviable position has forced physicians to enter the bargaining market in an effort to obtain proper payment for their services. Now, for the first time, the doctors of California have available the type of economic information required for such bargaining. Starting in 1950, a special committee of the California Medical Association went about a systematic program of studying the economics of industrial medical practice. Business indices, cost of living figures, wage bases and other economic factors were studied. The moral basis for setting industrial injury fees was considered, as were the historical facts in industrial practice and the common-sense factors in a system greatly enlarged since its beginning in 1914. Out of these studies has come the realization, unbelievable to some and unacceptable to others, that industrial medical fees have lagged far behind the economic trends which affect all other fees and prices. The doctor handling industrial cases is, bluntly, being discriminated against in terms of economic justice. Industrial fees, as stated in an official 1918 fee schedule, were based at that time on the fees which physicians might expect to receive from private patients with an average annual income of $1,250. With the average for all covered employees today at more than $3,700 annually, the doctor might expect about a 200% increase in such fees. Instead, he shows about an 80% increase. Is the physician's fee based upon his cost of operating his practice? If so, he is again from 10 to 20 years behind the economic wave in his industrial fees. Is his fee based on cost of living figures? If it is, the industrial part of his practice is in the red. The C.M.A. committee, armed with this information, has now come up against the bleak realities of trying to get official recognition of industrial fees in keeping with the times and the economic forces operating in all other parts of the industrial insurance picture. Between the Insurance Commissioner, the Industrial Accident Commission and the insurance

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carriers, the doctor is left to shift for himself, for none of them is willing to face up to the fact that industrial fees must be radically adjusted if they are to be made equitable and set at a level where the vast majority of California physicians can and will handle industrial accident cases. Under this squeeze, the C.M.A. committee has suggested two possible moves. First would be the attempt to secure legislation placing the responsibility and authority for establishing an industrial fee schedule squarely in the lap of a state authority. Second would be the possible drafting of an adequate fee schedule which would be recommended for use by all physicians whether it did or did not carry the approval of any of the state agencies or the insurance carriers. Both these suggestions are fraught with pro and con considerations. Both include elements which are not easily palatable to physicians. Both have inherent dangers which might bring about their failure. On the other hand, if bargaining across the table offers no more chance for success than has heretofore been demonstrated, radical alternatives may be indicated. If justice to all is to prevail, common sense would dictate the objective consideration of this problem by all concerned, with a view toward a swift and equitable settlement with the least possible disruption of existing relationships.

—Editorial, in *California Med.*, November, 1952.

Industrial Hospital

INTERNATIONAL Nickel Company of Canada, Limited, has equipped its hospital at Copper Cliff, in the Sudbury District of Ontario, where the Company's extensive mining operations are centered, with a new x-ray unit, the first of its type in use in Canada.

Southern Section

THE SECTION on Industrial Medicine and Surgery of the Southern Medical Association, R. LOMAX WELLS, Chairman, met on Wednesday and Thursday, November 12 and 13 during the 46th Annual Meeting of the S.M.A. On Wednesday DR. WELLS' Chairman's address, "Human Relations in Industry," dealt with the importance of good attitudes and good human relations in industry, and the effects of programs designed for better working relationships on the health of all concerned in industrial enterprise. DR. WELLS was followed by PAUL A. DAVIS, M.D., whose subject was "Industrial Medicine and Private Practice." Discussing fields of cooperation between the industrial physician and the physician in general practice, DR. DAVIS outlined methods of procedure in making a correct diagnosis, and described some pitfalls in diagnosis to be avoided by the general practitioner, illustrating with several common industrial hazards, and details of the processes necessary to arrive at a sound diagnosis. WILLIAM M. BICKERS, M.D., talked on "Pre-menstrual Tension: Menstrual Disability," explaining that nervousness, anxiety state, breast pain, abdominal fullness and back pain make up a clinical syndrome, which in many patients causes more disability and decreased efficiency during the pre-menstrual week than do the symptoms of menstruation, and stating that it has been shown that these symptoms are in large part due to abnormal

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water metabolism, which can be regulated by the use of a new compound which he described. ELIAS MARGO, M.D., presented a discussion on "Knee Trauma," illustrated with lantern slides; and JAMES P. BAKER, M.D., Medical Director, Greenbrier Clinic, discussed "Executive Health Examinations." On Thursday morning, November 13, D. V. HOLMAN, M.D., spoke on "Cardiovascular Disease in Industry." He reported on a group of carefully classified cardiacs, explaining the factors involved in their employment. MAC ROY GASQUE, Medical Director, Ecusta Paper Corporation, and GEORGE F. HOLT, Pisgah Forest, North Carolina, described "An Experiment in Foot Health," outlining the statistical incidence of foot disability among a specific group of industrial workers, and covering the initial steps of organization of a comprehensive program of industrial foot health. A statistical record of clinical experience, including treatment and results, was presented. RICHARD M. ADAMS, Medical Director, Inter-State Oil Pipe Line Company, Shreveport, Louisiana, talked on "Field Periodic Examinations," illustrating his presentation with lantern slides. JOHN R. WINSTON, Medical Director, Santa Fe Railway System, Temple, Texas, presented "The Emotionally Handicapped In Industry," stating that these are not confined to any one segment of the industrial population but are found in all ranks of the organization; that a few require special psychiatric investigation; that all require special understanding by management, labor, and the industrial physician. HOWARD R. MASTERS, Associate Professor of Psychiatry and Neurology, Medical College of Virginia, Richmond, Virginia, talked on "The Problem Drinker in Industry."

Deafness Test Case

WISCONSIN Industrial Commission has been overruled in a workmen's compensation test case involving liability for loss of hearing from long-time employment in a foundry or other place where there is extreme noise. The Commission had ruled that the Green Bay Drop Forge Company was liable for compensation to an employee who blames his 20% loss of hearing on his work. Compensation would be based on the same regulations governing the loss of members of the body, in industrial accidents. Judge H. W. Sachtjen in Dane County Circuit Court ruled that this would apply if the hearing were lost as the result of one incident, such as an explosion. However, since the hearing was lost over a period of time, he held the case is governed by the provision of the act covering diseases, such as tuberculosis and silicosis, contracted through employment. Such compensation cannot be paid until the employee loses wages or employment. In this case there was neither. Inasmuch as there are several similar cases pending before the Commission, the test case will be carried to the Supreme Court.

—*New York Journal of Commerce*, November 20, 1952.

Small Industry Plan

AT A MEETING of the Bloomfield Manufacturers Club Tuesday, public announcement was made of an Industrial Health Plan for Bloomfield. Dr. Charles E. Burrows, Bloomfield physician, described the plan as it applies particularly to small industry. It provides pre-employment exami-

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nations, and periodic health examinations for employees of member plants. It also supplies emergency medical care, laboratory service, x-rays, etc. This service will be available to all employees at any time at the request of their family physician. It will provide re-entry examinations after sickness, and preventive medicine—including inoculations and vaccinations. Main purpose of the plan is so the employer can keep a check on the health of his employees, himself and his business associates. The ultimate aim is to cover the entire industrial set-up in Bloomfield with a complete comprehensive medical program. The plan will act as a clearing house for health information for all employees in the Bloomfield area. One benefit which will accrue will be a reduction in absenteeism.

—*Bloomfield, New Jersey, Independent Press*, October 30, 1952.

Four Times As Safe

EMPLOYEES of the du Pont Company are just about four times safer at work than they are at home or any place else, even when their jobs call for handling high explosives or volatile chemicals. This is disclosed in a survey booklet published by the company entitled "The Story of Safety." Industry's safety program, the 28-page illustrated booklet says, is spurred by realization that safety is simply sound business procedure. It's not the result of external pressure of laws or regulations. The booklet describes how du Pont's injury frequency rate has been cut more than 93%—from 10.3 injuries per million man-hours worked in 1926 to 0.67 injuries per million man-hours in 1951. Had this improvement not taken place, at least 31,000 injuries that never happened could have occurred during the 25-year period. Built-in safety in plant construction, protective clothing and many ingenious devices have helped to better the safety record so du Pont has now focused its research to seek out means of reducing the "human error."

—*Richmond, Virginia, Times-Despatch*, October 28, 1952.

Dr. Trudeau Resigns

DR. FRANCIS B. TRUDEAU has resigned as President of the board of trustees of the Trudeau Tuberculosis Sanatorium. His successor is DR. J. BURNS AMBERSON, head of chest services at Bellevue Hospital in New York City, consulting physician for the New York State Tuberculosis hospitals since 1935, and Professor of Medicine at the College of Physicians and Surgeons at Columbia University since 1938. DR. TRUDEAU said he had reached the age of 65 and thought it was time for some one else to take over as president. He will continue as trustee and will serve at the hospital in an advisory capacity. He has been associated with the sanatorium since before the death of his father, DR. EDWARD LIVINGSTON TRUDEAU, founder of the institution. He took over supervision when his father died in 1915.

—*New York Times*, November 22, 1952.

Small Plant First Aid

THE FIRST AID GUIDE for the Small Plant prepared by the Detroit Industrial First Aid Advisory Committee, DR. A. H. WHITTAKER, Chairman, is now available in a 60-page, 6"x9" booklet. Inquiries addressed to this Journal will be forwarded.

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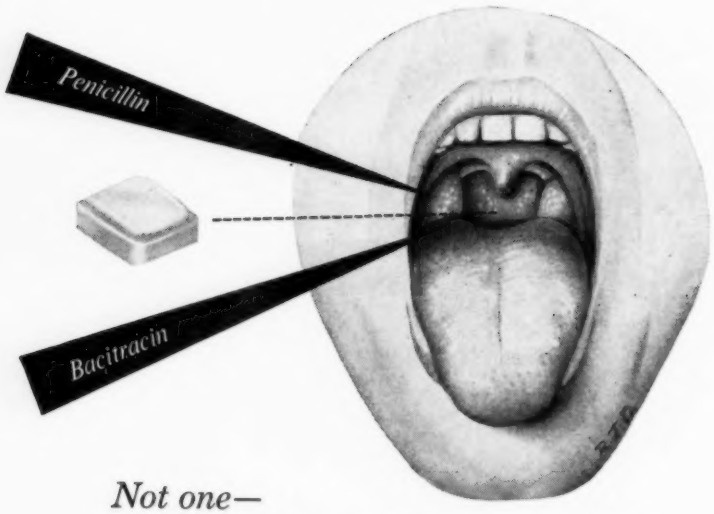

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1. Eagle, H., and Fleischman, R.: Proc. Soc. Exper. Biol. & Med. *68*:415 (June) 1948.

2. Bachman, M.C.: J. Clin. Invest. *28*:864 (Sept.) 1949.

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